The IRON AGE

Vol. 160, No. 11 — September 11, 1947

1947 Machine Tool Show Issue

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Indexed in the Industrial Arts Index. Published every Thursday. Subscription Price United States, its Territories and Canada $8; other Western Hemisphere Countries $15; Foreign Countries $20 per year. Single copy, 35¢. Annual Review Number, $2.00.

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Cable Address, "Ironage" N. Y.

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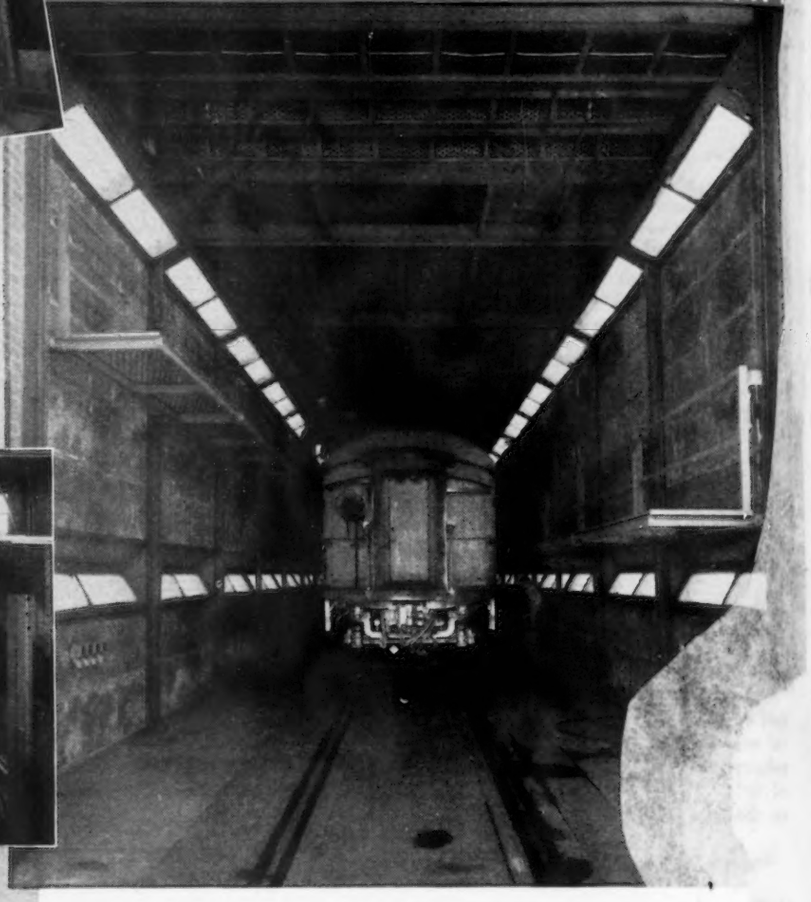
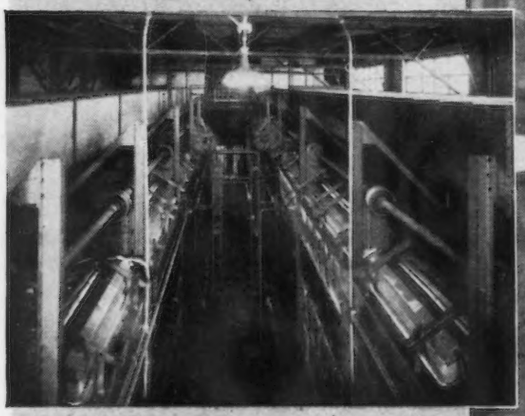
COMPLETE *Finishing* SYSTEMS

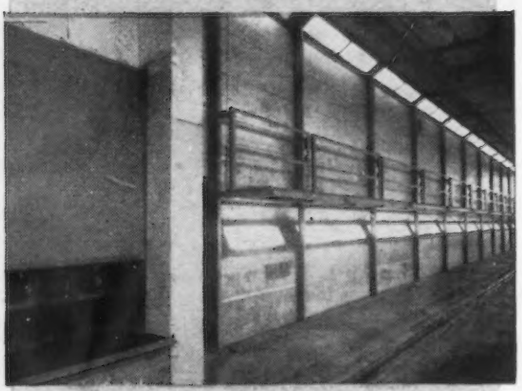
for ENAMEL • LACQUER • PAINT



At Right: Interior of Mahon Combination Spray Booth-Dryer Designed to Handle Railroad Coaches and Locomotives. Note Electrically Operated Scaffold-Elevators on Either Side (these may be adjusted up or down by the workmen at will from any position on the scaffold). Note, also, the Filtered Air Diffusers in the Upper Foreground. Above: The Suction-Exhaust Fans Located Directly Above the Hydro-Filter Units in the Rear of the Combination Spray Booth-Dryer.



Top View Showing the Two Combination Spray Booth-Dryers with Heating Ducts, Filtered Air Supply Units, and Operating Mechanism for Scaffold-Elevators.



Mahon Hydro-Filter Units on Either Side at Rear End of Combination Spray Booth-Dryers. These Remove Overspray from the Air Before It Enters Exhaust Fans.

Box Cars, Coaches, Buses and Trail

Here is a typical Mahon Finishing System designed to meet railroad requirements in [illegible] where repainting of rolling stock constitutes a major operation. This system consists of two combination Spray Booth-Dryers (one is illustrated above), and a Filtered Air Supply Unit. The two Spray Booth-Dryers are installed on parallel, adjacent tracks inside the shops, and may be operated simultaneously or individually as desired. This installation is another excellent example of the thoroughness of Mahon planning and engineering to meet specific requirements under any conditions. Twenty-seven years of pioneering and constant research in this highly specialized field have endowed Mahon engineers with a wealth of technical knowledge and practical know-how not available to you elsewhere. See Mahon Insert in Sweet's Mechanical Industries File.

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The IRON AGE
100 E. 42nd ST., NEW YORK 17, N. Y.

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September 11, 1947

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PMH—Tyrant and Slave

ALREADY string of superlatives and clichés slip easily off the pen to describe the Machine Tool Congress, which opens its doors next week in Chicago. Some 300 exhibitors will have 2000 machines costing $16 million spread over the half-million square feet of floor space at the Dodge-Chicago plant. Over 5000 motors, totaling 15,000 hp, will keep the wheels turning and the punches punching. It'll even require some 300 miles of electrical cable to feed the juice of life to this enormous panorama of the machine makers' art.

In all sober judgment, the reaction of industry to this show may well determine whether the competitive economy is a viable thing, ever ready to cast away the old cells for the new cells of healthy growth. Or, whether some seven years of prosperity *without* competition, seven years of profitable operation without the necessity to keep up to scratch, has led merely to a fatty degeneracy of easy living. If this latter be the case, then the mad race between costs and buying power, this uneasy prosperity based on destruction of accumulated wealth and mortgaging of future wealth in a few years could stumble into a frustating *cul de sac.*

The last Machine Tool Show was 12 years ago, in September of 1935. That seems almost an eon ago, back in a simpler age. Then, the shuddering days of the depression were beginning to blur at the edges. Then, any number of people engaged in the barren controversy of the machine versus overproduction and unemployment. Then, industry with instinctive distrust, was beginning to cast a cold, critical eye on Roosevelt's share-the-work. Then it was day-to-day cutthroat competition *without* prosperity, which discouraged the long-range planning so necessary to capital growth.

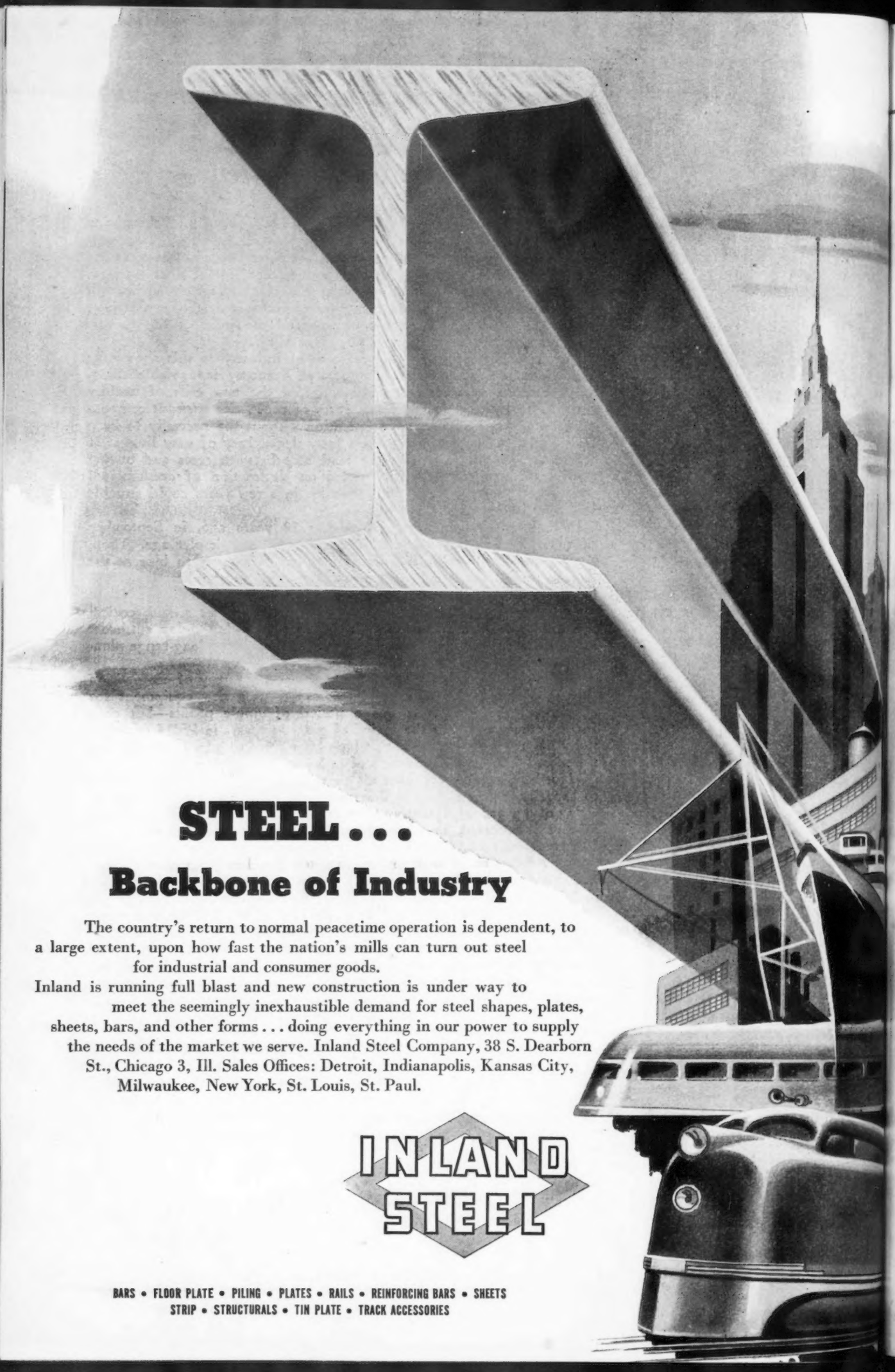
Only in the late 30's was there the healthy economy of competition *with* prosperity. It was a period of substituting new equipment for obsolescent machinery. It was a period of ample profits—but only for the efficient. It was the period of great increases in PMH (productivity per manhour) potentials, which later were to arm the world for the most frightening destruction of real wealth in all history.

Not by mere full employment, or the working of existing machines to capacity, will this wealth destruction be offset, or the standard of living of a growing population be maintained or increased, or a military machine supported, or world responsibilities shouldered. There has been no turning back, ever since the industrial revolution of the 18th century. It's either a matter of better and better machines, greater and greater manpower productivity, lower and lower prices (or higher real wages), or otherwise the machine masters the community.

Increased productivity is a responsibility of both labor and management. After two years of postwar lassitude, labor's productivity is again approaching prewar levels on prewar machines. The big (and necessary) jog to manhour productivity must come from greater and more efficient horsepower in the hands of each workman. Management must show less reluctance to accept obsolescence as an operating actuality. Money must be fed back into a business to exploit each inching forward of technical progress.

The great proportion of the country's productive equipment is over 15 years old. But obsolescence may be a matter of only a few years—a matter of design rather than material wear and tear. Next week Chicago will have every new machine, with every mechanical, hydraulic and pneumatic auxilliary yet devised to nudge manhour productivity up a couple more notches. At Chicago the burden will be on management.

T. W. Lippert



STEEL...

Backbone of Industry

The country's return to normal peacetime operation is dependent, to a large extent, upon how fast the nation's mills can turn out steel for industrial and consumer goods.

Inland is running full blast and new construction is under way to meet the seemingly inexhaustible demand for steel shapes, plates, sheets, bars, and other forms . . . doing everything in our power to supply the needs of the market we serve. Inland Steel Company, 38 S. Dearborn St., Chicago 3, Ill. Sales Offices: Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

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► Among machine tool developments customers would like to see are: Better accessibility for servicing and cleaner design for upkeep; more unit sub-assemblies to facilitate repair; lighter paint jobs, easier cleaning; a planer that will also cut on the return stroke; and more semi-automatic machines and higher spindle speeds.

► Overshadowed by material shortages and huge demand is a real scarcity of good management material. Top executives of many firms are seriously worried about where tomorrow's leaders will come from. Reason: qualifications for top jobs have changed.

Today's top executive must now be a combination of Dale Carnegie, Boss Kettering and Professor Einstein; and he needs a sound background of law, psychology, public and industrial relations, current news and history. In addition, says a steel company vice-president, he primarily needs the ability to pick good executives.

► An Iron Age survey shows that 560 companies which spent $50,660,000 for machine tools in 1940 will spend $72,000,000 in the next 12 months.

► Some fuel oil producers actually would like to see some new pipelines to bring natural gas to the Midwest to take the pressure off fuel oil and thus provide more gasoline and a better overall fuel picture. But it may be just a pipe dream because steel pipe delivery time is the longest in the whole steel product list.

► A water-displacing corrosion preventive for indoor storage--which can be dipped, brushed or sprayed, is now on the market. The coating is transparent and so permits inspection at any time. The preventive does not fully harden nor become insoluble after long exposure.

► Some 275,000 ft of steel pipe once earmarked for shipment to Russia under Lend-Lease, is now on its way to Midwestern farms for watering and irrigation systems. The Senate Small Business Committee found the pipe in New York port warehouses and put pressure on the State Dept. to release the pipe to War Assets Administration for exclusive sale to farmers.

► Recently developed to a manufacturing plant's specifications is an oil bearing grinding coolant which plates out an oil film on the parts as they are ground. Better wheel life is also said to be obtained with this coolant, particularly in centerless grinding.

► There are increasing signs that the powder metallurgy industry is recovering from its doldrums, the latest being reports that two of the largest automobile manufacturers have recently ordered substantial quantities of new pressing machinery.

► Public announcement of a new flame hardening machine is expected next month. It will have electronic temperature control and be designed for processing gears, pinions, shafts and other parts that lend themselves to rotation.

Production results obtained on a 4-in. diam gear, 1-in. wide, is usually 300 parts per hr with excellent metallurgical results. Acetylene, propane and natural gases can be used, with corresponding heating rates.

► One can no longer find any positive opinions of a coming decline in steel production. No one will say when it will occur--or if it will come for some time. Past utterances are a little embarrassing to steel executives and market observers--not to mention The Iron Age. Today's picture shows heavy demand, production difficulties and growing backlogs. Meanwhile the gray market continues.

► With the elimination of German competition and slow recovery of Italian industry, Austria now ranks second in importance on the list of European ball bearing manufacturers, after the Swedish SKF. Austria's production is 75 pct for export, mainly to Great Britain and Czechoslovakia.

► The Fretz-Moon mill ordered here by the French Valenciennes & Denain Tube Co. is now being delivered and should be producing welded tubes by the beginning of next year.

Delivery of United Engineering and Westinghouse equipment for the new French hot strip mill will begin early next year but the whole plant will probably not be finished before 1949.

► French motor car prices have been boosted another 25 pct. This puts the 11-hp Citroen at $1648 and the 13-hp Ford at $2520.

Mr. Stillwell describes the growth of the shows from 1927, when 7500 visitors attended to this year's event when 100,000 are expected to attend . . .

40 Years of Machine Tool Shows

o o o

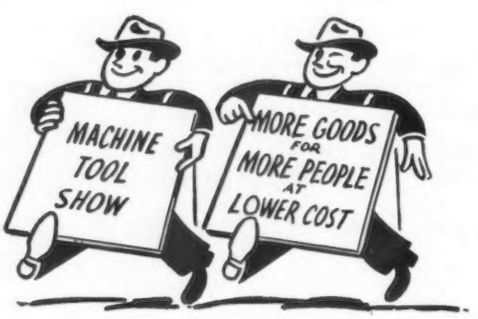
By CHARLES J. STILWELL

President, Warner & Swasey Co., Cleveland

o o o

MACHINE tool shows have usually been planned for periods of declining demand for production machinery. This is as it should be but, at the same time, shows become a little precarious for the machine tool industry. Promptly, when knowledge of such plans gets abroad, buyers of machine tools invariably withhold their buying, and a hiatus in machine tool orders develops months in advance of the time when a show opens. Fortunately, however, the ingenuity of machine tool engineers continues to progress, and each show has resulted in an increased demand for machine tools.

In this country, annual shows have been avoided. The experience of the Leipsig Fair and the numerous other annual affairs in Europe to the contrary notwithstanding, the American capital goods industry is not nearly so much interested in attending a string of shows to see yearly the minor changes of models as it is in staying on the job and increasing production day by day. It is difficult to picture what would happen if all the production executives in this country had to attend annual shows in New York, Philadelphia, Atlanta, Cleveland, and San Francisco.



The first show sponsored by the industry was held in Cleveland in 1927. Despite the hesitation of the industry in holding its own show unaided, it attracted an attendance of 7500 people. Encouraged by this result, a second show was staged by the Machine Tool Builders Assn. in the same city in 1929, with an attendance of 20,000 persons. It was at that show that motorization began to take definite place in machine design. It's a little amusing now to think back to some of the fantastic motor-drive arrangements that appeared in the 1929 show, as compared with the beautifully engineered drives and elaborate electrical controls which will be seen at this year's show at Chicago.

In 1935, following the depression, the machine tool industry marshalled its strength for a battle against obsolete equipment, for as the economy of manufacture advances, so the economy of the whole country moves forward. It was in the 1935 period that tungsten carbide began to have serious effect on the design of machine tools. Also the 1935 show marked the beginning of the emphasis on surface finishing. From that time forward, the metalworking field has been provided with machine tools

capable of producing greatly improved surface quality. Certainly it can be said that the 1935 show demonstrated to the world that the machine tool industry had grown up. It demonstrated the greatly increasing importance of machine tools in the lives of the people of the country. That show attracted 60,000 people.

This year's great show, which will open in Chicago Sept. 17, will again illustrate the advance in American engineering and American ingenuity as never before. Machines to be exhibited in turning, milling, planing—in every branch of metal cutting—will demonstrate the application of principles of design and principles of mechanical design, as well as pleasing external appearance which will command new interest.

Because of the gigantic task which machine tool builders were called upon to perform in furnishing the vital tools for war, the industry has been prevented from making improvements beyond those which could be quickly effected in crowded manufacturing schedules. Now, however, time has permitted many revolutionary advances in the arts of metal cutting to be consolidated in new machine design.

The Chicago show will provide a great thrill—a continuing inspiration to those of us whose duty it is to make things of metal for people—and make them fast—and cheap—and good.

What IRON AGE editors said about the first machine tool show in 1927

Most Recent Developments in the Tools of Industry to be Assembled Under One Roof in Cleveland

FOR the first time in the history of the American machine tool trade, the exposition to be held in Cleveland the week of Monday, Sept. 19, will present in an all-inclusive way the most outstanding accomplishments in "The Master Tools of Industry." There will be 174 exhibitors and their machines on display will bring together under one roof most of the results designers have been striving for in recent years in the direction of maximum production and low unit costs in the manufacture of products from metal. Literally it will be a $1,000,000 machine shop, most of it in operation. Known as the National Machine Tool Builders' Exposition, it is sponsored and managed by the National Machine Tool Builders' Association.

Many of the machine tools to be shown have never before been exhibited. In some cases the models are so recent that no announcements regarding their features have been made. The exhibits will include many high-production units of new design as well as improved models of equipment previously known to users. Engineers and others of the staffs of machine tool companies will be on hand to explain features of construction and operation, also to give information on the definite production and financial economies that may be expected from the equipment shown.

Because of the quantity, variety and high character of the exhibits, this exposition will afford users an unusual opportunity to compare the status of their own production equipment with the new standards set by machine tool engineers. It is safe to predict that the exposition will be taken as fresh evidence that machine tool builders generally are highly responsive to the continuing demand for the lowering of production costs in the metalworking industries.

Admission to the exposition hall is free to everyone interested. No invitation is required, nor will tickets be furnished, but every visitor will be asked to register. Nearly all of the large manufacturing companies in the country have made known their intentions to send one or more of their technical men. Visitors are also coming from Europe, Canada and the Latin-American countries.

Some of the machines to be exhibited are briefly described and illustrated in following pages. A complete list of the exhibiting companies, with enumeration of products to be shown and names of representatives in attendance, is also given. More extensive editorial treatment of the new and improved machines will be given in subsequent issues of THE IRON AGE.

What's in This Issue . . .

The story behind the development of the machine tool shows from the first show 40 years ago to the present one, highlighting the significant facts of each. *p. 168*

Senator Taft, co-author of the controversial Taft-Hartley Act, gives management an authoritative explanation of what the new labor act does and what it does not do. Must reading for the executive concerned with labor relations problems. *p. 170*

The background story of this largest of all machine tool shows, telling who sponsors it, what societies are cooperating in the congress, and listings of committee members. *p. 174*

Handy street maps of Chicago and vicinity to help the machine tool show visitor find his way around the loop and to select the quickest way to drive to the show. *p. 182*

Complete list of exhibitors, telling where their booth is located and a brief note on what is being exhibited. *p. 175*

Complete floor plan of the machine tool exhibit to aid the show visitor locate specific booths (and himself). *p. 180*

The complete program of the machine tool congress showing when and where each meeting will be held. *p. 184*

Pertinent problems of the machine tool user are covered in this new and authoritative survey. Questions of prices, depreciation, employee resistance to new tools, WAA purchases, etc., are answered in this timely discussion. *p. 190*

An outline of what to expect in metal cutting techniques at the show is previewed, with some good guesses as to what these new machines and techniques may mean in tomorrow's cutting methods. *p. 185*

Must reading for management is this explanation of the provisions of the new labor law.

o o o

BY ROBERT A. TAFT
United States Senate

o o o

the TAFT-HARTLEY ACT

- What it does do
- What it does not do

ONE of the most outstanding accomplishments of the 80th Congress was the passage over the President's veto of the new Labor Management Relations Act of 1947. Probably no piece of legislation has ever been so carefully studied and worked out in such detail, both in House and Senate, and in conference. It was not the work of any one or two men, but represents the consensus of opinion of scores of legislators after prolonged debate.

The law was enacted in response to a general public demand, arising out of the tremendous injustices from the action of certain irresponsible unions and the prolonged strikes which interfered so seriously with recovery.

Union leaders have subjected the new Act to bitter attack and misrepresentation. Without presenting any material specific criticism, they have tried to smear the Act as a whole, its authors, and the Congress. They have threatened to purge from public life, every man who voted for the Act. President Truman weakly yielded to their pressure, but Congress did not. The majority, even of the Democrats in the House of Representatives, voted to override the veto, and the Democrats in the Senate were almost equally divided. If this veto had been sustained, union leaders might properly have boasted that their power would always prevail over the desires of a majority of the American people.

The truth is, that while the unions have succeeded in stirring up some opposition to the Act as a whole, its major provisions meet the approval, not only of the people at large, but of the majority of union members themselves.

The difficulties in the labor field arose, for the most part, from existing statutes—the Clayton Act, the Norris-LaGuardia Act and the Wagner Act. Originally, the employer undoubtedly had a great advantage over his employees in such bargaining as took place. These acts were passed to correct that situation, and they did so. But taken together with the various regulations made by administrative boards and decisions of the courts, the results went far beyond the real intent of Congress and gave the labor leaders, not only an arbitrary control over their members, but a great advantage in dealing with employers, except the largest companies in the country. The little businessman was practically at the mercy of the big union. The theory of the new law, even more than of the old laws, is to base all labor relations on free collective bargaining between employer and union, but to give some assurance that that bargaining shall be on a basis of equality. It does not prevent any reasonable union activity. It requires union recognition, and strengthens the principles of collective bargaining rather than weakening them.

The second purpose of the Act was to remedy abuses which have become apparent, particularly where they have arisen from the provisions of existing law. In correcting these abuses, the Act endeavors to protect the individual union member against arbitrary or unjust action by his own union, to protect the employer against unfair and one-sided rulings and to protect innocent third parties not involved in a labor dispute against the arbitrary action of employers and union.

In the third place, the Act recognizes the power which labor unions have acquired and should necessarily restrain, and imposes responsibilities on these unions commensurate with their power.

In view of the uproar made by some labor union leaders, it is well to point out what the Act does not do. It does not permit any employer

to refuse recognition to a union representing his employees. It does not in any way interfere with the right to strike if the purpose of the strike is to secure better wages, shorter hours or better working conditions. It does not make any man work against his will, or impose any compulsory arbitration or government fixing of wages. It does not restore in any way power of the individual employer to secure court injunction, free from the provisions of the Norris-LaGuardia Act. It does not interfere with nation-wide collective bargaining, even if such bargaining amounts to a monopoly, except that where national safety or health is threatened, strikes may be enjoined for 80 days while mediation procedures are attempted and elections held.

The contract between the United Mine Workers and the coal operators makes those who declaimed about a slave labor bill look very silly indeed. Of course the Act never intended to pass on, or let the government pass on, the rate of wages to be paid. It never intended to interfere with the right of employer and employee to enter into whatever contract they wished to make so long as it did not interfere with the individual rights of labor union members. The Act does require that both parties enter into collective bargaining in good faith, and complete it by a written contract. Therefore, it would be an unfair labor practice for a union after negotiating terms to refuse to sign a contract, or to sign a contract which releases the union from all liability for its performance. Just as the unions compelled the employers to put their collective bargaining agreements into writing, so can an employer compel a union to sign a valid contract. But if the employer does not choose to file an unfair labor charge, there is nothing illegal in the failure to sign a binding contract. The Lewis coal contract does not relieve the labor union from liability for its performance. I can see no legitimate objection to a limitation of liability by unions for acts of others which it cannot restrain.

Important Provisions of Act

Public opinion polls show that while a majority of employees are opposed to the Act as a whole, they generally approve its specific provisions when they are acquainted with them. Some of the most important provisions of the Act are as follows:

Freedom of speech is guaranteed for employer and employee alike. The desirability of doing this was recognized before our committee, even by Mr. William Green, AFL president.

Secondary boycotts and jurisdictional strikes are made unfair labor practices and subject the union conducting them to monetary damages. Testimony before our committees was almost universal as to the serious injustices brought about by secondary boycotts and jurisdictional strikes, particularly to those third parties who were in no way involved in the dispute. No witness defended this kind of strike. There was some suggestion that certain kinds of secondary boycotts might be justifiable, but no one could ever define what they might be. If they can be found, they can still be exempted from the provisions of the Act.

Unions are required to file financial reports with their members and other information with the Secretary of Labor. Most unions admit that their members are entitled to this information, and there is no subject on which the public and the union members themselves are so united. Eighty-five percent of union members favor it. Corporations have had to make these reports for years.

Senator Robert A. Taft

o o o

The closed shop, which gives the union a veto power over all employment, is made illegal, but the union shop, under which persons employed must join the union within 30 days, is permitted if approved by the vote of a majority of the employees. However, even in this case, the union is not permitted to force a man's dismissal if that man is willing to join the union and pay union dues. In other words, a union may arbitrarily refuse to admit a man or fire him, but if that refusal or firing results from some cause other than non-payment of dues, then the union cannot force the employer to dismiss that man. The Board is given the power to prevent excessive or discriminatory dues.

We had many cases where a union has fired a man because they did not like his political opinions, or the way he testified in court, or his opposition to the union leadership, and where, because of a union shop agreement, the employee was dismissed from his job. Nothing could be more opposed to fundamental principles of American freedom or justice than such power or its abuse. Undoubtedly, the union leaders wish to retain this power over their men, but we could not continue the present law if workmen are to have any real freedom at all. Some 77 pct of union members apparently approve this provision.

The abolition of the closed shop resulted from abuses shown to exist, particularly in the maritime industries and their hiring halls, in which union control of employment in many cases had absolutely destroyed discipline and efficient operation.

Unions are made liable on their contracts as if they were corporations and are required to

bargain collectively in good faith with their employer, just as employers have been required for years to bargain in good faith with their union leaders. Unions today are theoretically liable on their contracts, but the difficulties of enforcing union liability has been so great in many States as to be impracticable. Furthermore, judgments against unions have been enforceable in some states against individual members of unions. The Act provides that they are now enforceable only against the union itself and its funds. For years the unions have insisted upon the importance of collective bargaining agreements, and have boasted of their desire to abide by them. Those Union leaders who now object to liability for breaking contracts show only their own unreasonableness, prejudice and bad faith. Unions today are big business. There can be no logical argument for exempting them from liability on their contracts. Even union members approve such liability by a large majority.

The law requires all union officers to file affidavits that they are not Communists, or members of any organization that believes in or teaches the overthrow of the United States Government by force or by any illegal or unconstitutional methods. There is a penalty on any such officer who files a false affidavit. This would seem an effective way of getting rid of Communist officers in American unions. A desire to get rid of these officers has been often expressed by union leaders, and is certainly shared by an overwhelming majority of union members. The opposition of union leaders to the filing of such affidavits raises a serious question in the good faith of their protests against Communist-controlled unions.

Wagner Act Rewritten

The Wagner Act is rewritten to eliminate injustices, and made the Act a two-way street. Up to now it has been entirely a weapon against the employer. The new Act prescribes unfair labor practices on the part of unions, but without modifying in any way the existing restrictions on employers. Thus, it is provided that a union cannot coerce an individual employee into joining a union or staying away from his job. Unions are required to bargain collectively. Secondary boycotts and jurisdictional strikes are made unfair labor practices. So, also, the forcing of an employer to discharge a man without cause.

The one-sided nature of the Wagner Act has long been recognized. There is no reason why it should not operate against improper activities by unions as well as by employers. The principal beneficiaries, incidentally, will be the individual union members who are protected against the arbitrary acts of their officers.

The Act is also amended by separating the prosecuting and judicial functions of the National Labor Relations Board. In the hearings in 1939, I was impressed by the complete injustice of any procedure where the same man or men initiate the prosecution, conduct the trial and pass judgment on its results. The new Act gives the general counsel charge of initiating and pressing prosecution for unfair labor practices and confines the board to judicial action. Furthermore, in reviewing that judicial action, the federal courts are given a wider power than they have today. The Supreme Court has held that almost no action of the board could be reversed under existing law. The new Act, while it gives preponderant weight to the board's decision, permits the courts to examine the entire record to see whether it offers substantial evidence to support the board. No man with an impartial mind and a respect for justice could criticize the action that has been taken.

Union Political Contributions

The Act continues the present provision which prohibits unions from contributing to political campaigns when federal offices are involved, and adopts the provision that unions shall not make expenditures for such political campaigns. A tremendous furore has been stirred up on the ground that this interferes with freedom of speech. Of course there is nothing whatever in the Act which prevents union officials from taking part in political campaigns and expressing their opinions of candidates as violently as the laws of libel will permit. The law has long prohibited corporations from making contributions, and it was always supposed that this also prevented the expenditure of corporate funds directly in elections through the publication of advertisements or pamphlets. The law simply subjects unions to exactly the same limitation as corporations. Unions are formed for certain specific purposes, and one of them is not to support or oppose candidates for office when there is almost certainly a difference of opinion among the union's own members. Dues paid by union members are paid for union purposes by members of all parties and friends of all candidates, and they are not paid for the purpose of promoting the interests of those candidates whom the union officers happen to favor.

It is suggested that the publication of a union newspaper might itself be a violation of the new Act. The legislative history in Congress shows that this was not the intention. If the Act is in any way ambiguous in this regard, I should favor an amendment making it clear that the Act did not intend to affect any bona-fide newspaper, even if the subscriptions are paid for out of union dues. But the Act certainly is intended to prevent funds contributed for union purposes from being used to defeat or elect members of Congress. It does not prohibit the setting up of political organizations sponsored by unions, such as the CIO-PAC, but their funds must come from those who believe in their political principles, and must not be coerced from every union member.

The Act sets up a new impartial mediation service with a National Labor Management Panel of 12 men. More responsibility is given to this service to prevent strikes before they occur. A 60-day waiting period is prescribed, but if negotiations are opened 60 days before the end of the contract, the waiting period need not extend beyond the expiration of the contract.

Strikes by government employees are forbidden. This is no change in the existing law. It is considered that men who choose to work for the government give up their right to strike.

Limitations are placed on the check-off and the creation of welfare funds. Contracts providing for the check-off or for welfare fund payments divert from the individual employee the money which his labor has earned, and places these funds in the hands of the union leaders. Consequently, admitting the desirability of these practices, there should be some regulation to limit the practice and prevent abuse by union leaders. The Act simply requires that welfare funds created by direct payments from the employer to the union be trust funds for the benefit of, and enforceable by, each individual employee, and that his rights be definitely stated in the agreement. It also requires employer participation in the management, and independent audits of the fund. The provision is, in effect, a stop gap provision until a more complete study can be made of the whole subject of welfare funds in particular industries and their relation to the national social security system. In the meantime, we do not desire to give union officers huge sums to be dispensed at their discretion for anything they may choose to call welfare, or permit them to favor some employees or classes more than others. The check-off provision merely requires that check-offs be authorized in writing, which is the usual provision today. Seventy-four percent of union members favor such a limitation.

The Act contains a provision to deal temporarily with strikes or lock-outs affecting an entire industry or a substantial part thereof which imperil the national health or safety. It permits the President to appoint a Board of Inquiry, and then obtain an injunction effective for 80 days. During that period, the mediation service attempts to settle the dispute and finally holds an election on the best offer made by the employer.

How the Taft-Hartley Act Benefits the Individual Union Member

The various provisions of the Taft-Hartley Act which directly benefit the individual union member are summed up by Senator Taft as follows:

"It is true that in protecting union members against arbitrary union leaders, we somewhat decrease the power of those leaders, but we do not decrease it below the point where it will be fully effective. If a majority of the men back their leaders, they retain exclusive bargaining power.

"They retain the power to call strikes when contracts expire or are violated by the employer.

"They retain the power to do everything which falls within the legitimate purposes of a labor union.

"They deal with their employer on an equal basis.

"The Act protects the individual employee by providing that union shops can only be agreed to if a majority of the employees desire it. Even where union shops exist, a man cannot be deprived of his job as long as he is willing to join the union and pay his dues, no matter how arbitrary the union may be in excluding him or firing him from the union. His union dues cannot be used for political purposes, but only for union purposes. The employee cannot be coerced by threats or otherwise to join the union, or to stay away from the plant.

"He cannot be required to pay excessive or discriminatory dues.

"He has the right to have a financial report from his officers and full information regarding the operation of the union.

"He has the right to object to any check-off from his wages without his written consent.

"He has the right to have welfare funds, set up for his benefit, administered as trust funds and properly supervised and audited."

It is quite true that this proposal limits the right to strike contrary to the general principles in which I believe. It was felt, however, that where the national health or safety were threatened, it was not unreasonable to ask employers and employees to continue the status quo for 80 days until every possible effort for settlement had been made.

The public generally demands a much more extensive prohibition against the right to conduct national strikes. I don't believe they realize how much the freedom to strike is necessary to a free economy. If the right to strike is taken away, something must be substituted for it, compulsory arbitration or government fixing of wages. Once the government undertakes to fix some wages, it will probably go on to fix all wages. Once it fixes wages, it must fix prices and we move rapidly toward a totalitarian state in which there is no longer a free competitive economy.

But it is said, what will happen if a national strike paralyzes our economic system? My answer is, in the first place, that it has not done so yet, and that voluntary methods in the end have succeeded and probably will succeed in preventing such strikes or ending them before serious damage occurs. If we do have something in the nature of a general strike or a strike in a particular industry which threatens the existence of the people, then we have what amounts to revolution. As the very last resort, I would support a special emergency act dealing only with the particular emergency, giving the government power to seize facilities and operate them, call for volunteers, seize union offices and funds, and take every other effective measure necessary to preserve the people and the government. But such a law is no proper part of a Labor-Relations Act.

The Act has not been written for the benefit of employers, except as they have suffered from the abuses of existing law. It has been written to abolish injustice, and to protect alike the employer, and the employee, and the public.

More than 300 exhibitors to show 3000 machines in huge Dodge-Chicago Plant.

The 1947 Machine Tool Show

LITERALLY thousands of new ideas for producing more goods for more people at lower cost will be available for the taking at the 1947 Machine Tool Show to be held in Chicago, Sept. 17 to 26. Sponsored by the National Machine Tool Builders' Assn., the show will be housed in the huge Dodge-Chicago plant, the largest manufacturing plant under one roof. Some 300 exhibitors will display close to 1000 different types of metalworking machines, a majority of the exhibits being operating displays.

The fourth show to be held by the tool builders and the first since 1935, this year's exhibits will mark the first introduction of many new and revolutionary machines. Judging by plans of the exhibitors revealed to date, many of the machines to be shown will render obsolete a large portion of present tooling ideas and techniques.

• Show Committee Chairman—Swan E. Bergstrom, sales manager, Cincinnati Milling Machine Co.

The significance of the show is explained by Herbert H. Pease, NMTBA president, in this manner: "During the years of the war, emphasis was entirely on quantity production, which meant that machine tool models, for the most part, were frozen. New developments and techniques were evolved, however, and this show will offer the first opportunity to display these latest advances in the art of removal metal."

Running concurrently with the tool show will be the Machine Tool Congress, sponsored jointly by eight technical societies. This congress will feature daily technical sessions and dinner meetings held in the evening to avoid conflict with show visitations. An unusually interesting program of speakers, listed elsewhere in this issue, has been arranged and will include addresses by such notables as Charles F. Kettering, James F. Lincoln, Fulton Lewis, Jr. and others. The meetings of the congress will be held in various easily accessible hotels in the downtown area of Chicago.

The societies participating in the congress are: American Machine Tool

Distributors' Assn., American Society of Mechanical Engineers, American Society of Tool Engineers, American Foundrymen's Assn., National Electrical Manufacturers Assn., Chicago Technical Societies Council, Society of Automotive Engineers, and National Machine Tool Builders' Assn.

The committee arranging the congress includes K. H. Hobbie, Driver-Harris Co.; A. C. Danekind, General Electric Co.; Mrs. Frida F. Selbert, NMTBA; Warner Seely, Warner & Swasey Co.; C. V. Briner, Pipe Machinery Co.; E. C. Bullard, Bullard Co.; A. B. Einig, Motch & Merryweather Machinery Co.; L. F. Nenninger, Cincinnati Milling Machine Co.; Joseph Geschelin, Automotive Industries; T. R. Jones, A. T. F., Inc.; W. J. Peets, Singer Mfg. Co.; and I. A. Rose, Maytag Co.

Arrangements for the Machine Tool Show have been made by a show committee headed by S. E. Bergstrom, Cincinnati Milling Machine Co. and including W. L. Dolle, Lodge & Shipley Machine Tool Co.; R. W. Glasner, Clearing Machine Corp.; H. G. Hoglund, Van Norman Co.; R. J. Kraut, Giddings & Lewis Machine Tool Co.; D. M. Pattison, Warner & Swasey Co.; and Louis Polk, Sheffield Corp.

The Chicago committee for the show is comprised of R. W. Glasner, Clearing Machine Corp.; George Habicht, Marshall & Huschart Machinery Co.; E. K. Welles, Charles H. Besly & Co.; A. G. Bryant, Cleereman Machine Tool Co.; H. B. Smith, Illinois Tool Works; N. A. Booz, Federal Machinery Sales Co.; M. J. Wiora, Bryant Machinery & Engineering Co. and E. P. Essley, E. L. Essley Machinery Co.

The registration committee consists of H. G. Hoglund, Van Norman Co.; T. B. Buell, Sundstrand Machine Tool Co.; K. W. Connor, Micromatic Hone Corp.; E. B. Gleason, Gleason Works; Frank Moran, Carlton Machine Tool Co., and R. R. Rhodehamel, National Acme Co.

Exhibitors at the 1947 Machine Tool Show

A LISTING of exhibitors, their booth numbers, and a brief description of what will be exhibited in each booth is given below. This information is the latest available at time of going to press. A floor plan to aid in locating the exhibits is given on page 181.

Booth No. Exhibitor

126—Abrasive Machine Tool Co.

Precision horizontal spindle surface grinding machines, hand feed and power feed models; new vertical spindle reciprocating table surface grinding machines; power driven graduating machine; multi-micro finishing machine for finishing straight and multi-angle holes.

571—Acme Equipment Co., Inc.

New foot power squaring shear; new air-hydraulic operated shear.

646—Acme Industrial Co.

Drill jig bushings, dowell pins, screw machine reamers, limit gages, and samples of precision grinding and flat and cylindrical lapping.

673—Ahlberg Bearing Co.

Precision ball bearings; tapered roller bearings; cylindical roller bearings; pillow blocks; self-aligning ball bearings with automatic bearing adjustment.

33E—Aircraft-Marine Products, Inc.

New automatic wire terminator; new pneumatic hand tool; new mobile power press crimping system for electrical terminals; New solderless fixture type splicing connector; new corrosion-proofing process.

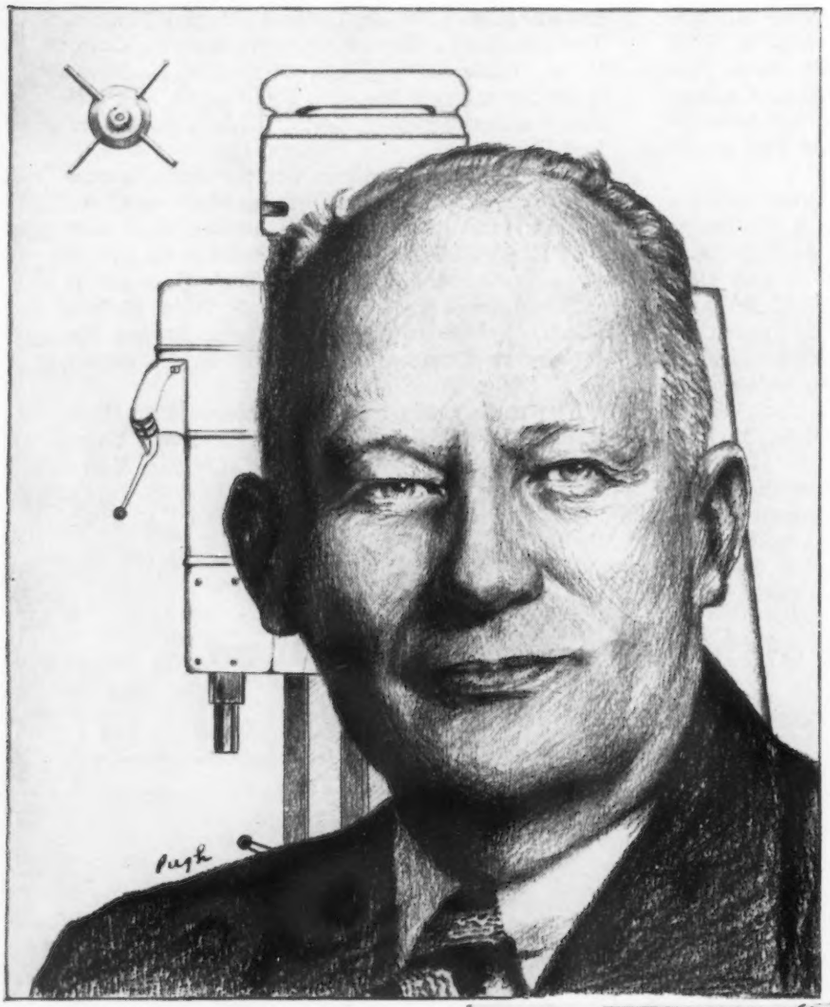
640—Ajax Mfg. Co.

Improved 2-in. forging machine; redesigned high-speed forging press.

645—Allegheny Ludlum Steel Corp.

Tool steels and carbides; data on designing of carbide die sections; stainless and electrical steels.

• NMTBA President—Herbert H. Pease, president, New Britain Machine Co.



ABOVE

• NMTBA First Vice-President — Alexander G. Bryant, vice-president, Cleereman Machine Tool Co.

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Booth No. Exhibitor

237—Allen-Bradley Co.

Motor controls, ac and dc contactors, control relays, timing relays, starters and reversing switches.

22—American Broach & Machine Co.

Vertical internal pull-up broaching machine; universal 3-way broaching machine; 3-way broaching machine; horizontal broaching machine; single ram surface broaching machine; vertical press.

47B—American Machine and Foundry Co.

Automatic drill chucks and tapping attachments.

1A—American Machine Tool Distributor's Assn.

57—American Tool Works Co.

New hydraulic shaft-duplicating lathe; lathe for use with cemented carbide cutting tools; new radial drill.

328l—Ampco Metal, Inc.

Sand and centrifugal castings; extruded bronze rod and tubes; continuous cast alloys, resistance welding electrodes and arc welding electrodes.

679—Anchor Coupling Co.

New coupling for medium pressure hose with built-in swivel; new reusable coupling for medium pressure hose applications; hydraulic hose assemblies and associated fittings; automotive fuel and filter line hose assemblies.

54B—F. E. Anderson Oil Co.

Cutting oil, soluble and solution; preservatives and rust preventive compounds; industrial cleaners.

317l—Anderson Bros. Mfg. Co.

Hydraulic presses; power scrapers; hand hydraulic presses; balancing ways; straightness checker; pattern spotter; hand scraper.

243—Anker-Holth Mfg. Co.

Air cylinders; 3-jaw chucks for holding work on lathes; air and hydraulic cylinders; hand valves; foot valves.

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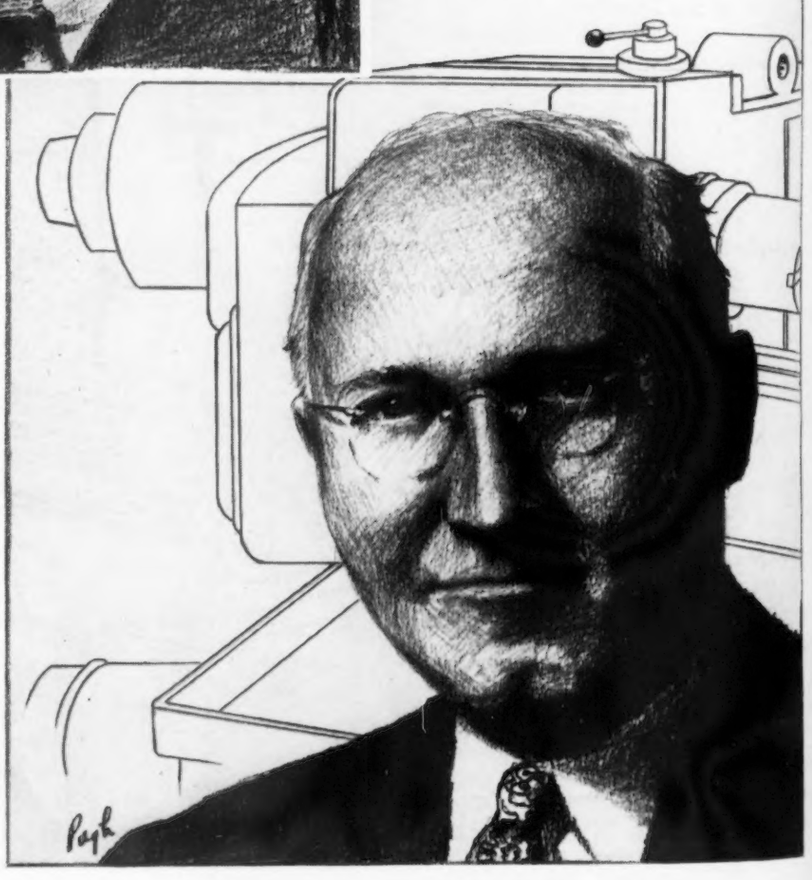
BELOW

• NMTBA Second Vice-President—L. D. McDonald, vice-president, Warner & Swasey Co.



Booth No. Exhibitor

550—Armstrong-Blum Mfg. Co.
Hack saw and band saw machines; new hydraulic band sawing machine; reciprocating hack sawing machine; hack sawing machine with new power-driven work handling table.

406—Armstrong Bros. Tool Co.
Tool holders; turret lathe and screw machine tools; bits, blades and cutters; machine shop specialties; lathe and milling machine dogs; C clamps; ratchet drills and drilling posts; wrenches; pipe tools.

31—Arter Grinding Machine Co.
Rotary surface grinders; automatic cylindrical grinder.

52—Automatic Transportation Co.
New material handling unit; new electric hand tractor; improved motorized hand truck; new high-lift fork truck.

467—Avey Drilling Machine Co.
Two standard upright drilling machines; redesigned upright.

624—Apex Tool & Cutter Co., Inc.
Inserted tooth milling cutters, tool holders and bits, posts, boring bars and other accessories.

602—Arrow-Hart & Hegeman Electric Co.
A new magnetic starter, selector switches, disconnect switches, grinder control panels and special small switches.

232—Axelson Mfg. Co.
Redesigned heavy duty engine lathes and accessories, precision tool room lathes; hollow spindle oil country lathes.

523—Barber-Colman Co.
New automatic hob sharpening machine; new automatic hob shifter for vertical hobbing machine.

49—Bardons & Oliver, Inc.
Geared electric turret lathes; universal turret lathe with air chuck; saddle-type turret lathe for bar work; new saddle-type turret lathe for chucking work; new cutting-off machine; new automatic turret lathe.

639—Baker Bros., Inc.
Extra heavy duty single spindle hydraulic feed boring machine; vertical type drill press; new electronic feed vertical drill; hydraulic feed units; hydraulic feed drilling unit; contour grinder.

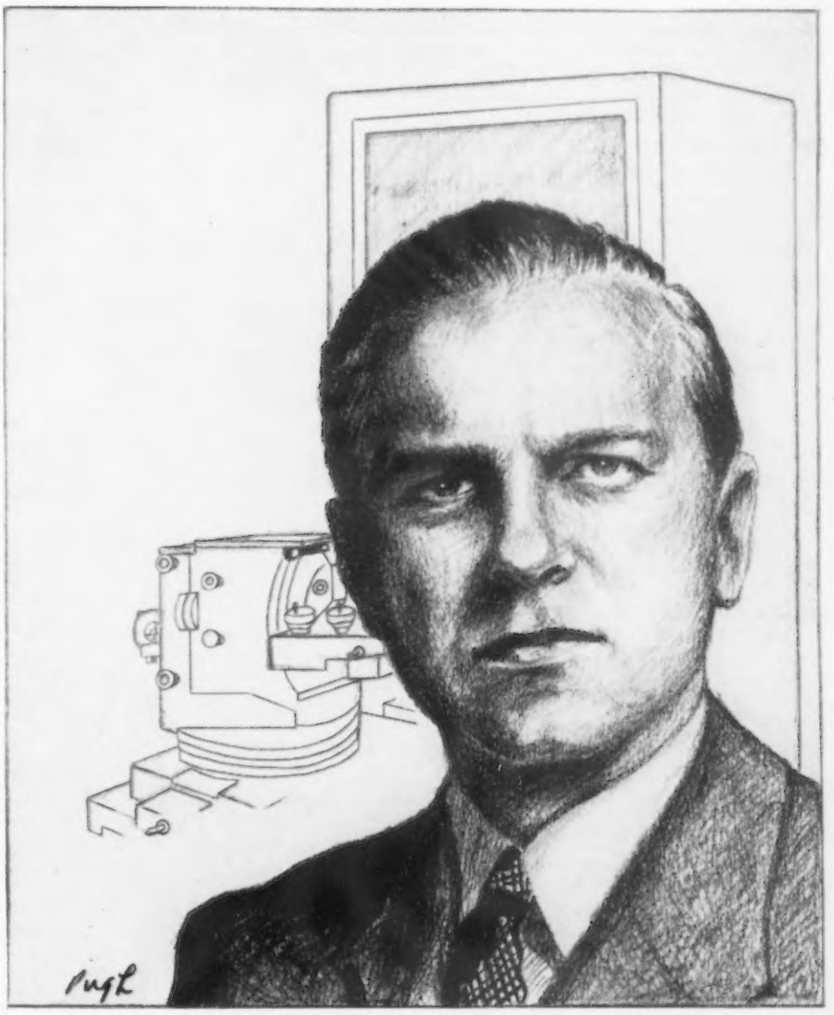
328F—Balcrank Inc.
Precision hand wheels; balanced cranks; compound rests and clamping levers for machine tools; industrial lubrication equipment.

129—W. F. and John Barnes Co.
Various types of self-contained hydraulic drilling units.

42—Barnes Drill Co.
New mechanical drilling machine; air traverse hydraulic unit; hydraulic honer; improved honing machine; magnetic coolant separator.

155—Barrett-Cravens Co.
Materials handling equipment, featuring the Tractor-Ox, a tractor unit capable of pulling trains up to 20,000 lb.

38—Baush Machine Tool Co.
Multiple spindle drilling and tapping machines and transfer machines, featuring a high speed multi driller and tapper using flexible cable drive to each arm.



• NMTBA Treasurer—Louis Polk, president, Sheffield Corp.

Booth No. Exhibitor

33BB—Bear Mfg. Co.
Four dynamic balancing machines showing balancing of automative crankshaft; fractional hp armature; hammermill rotor; combine reel.

275—Charles H. Besly & Co.
New grinder grinding tapered hedge shear blades; new grinder grinding drop forged mechanic's wrenches; new double vertical spindle dry grinder grinding coil springs; new vertical spindle wet grinder grinding gear covers; other grinders in operation.

482—Bijur Lubricating Corp.
Lubricating system showing metered lubrication; new gear pump.

40A—Black Drill Co.
Drill presses and drills to show hardened steel can be drilled without annealing.

226—Blanchard Machine Co.
Blanchard rotary table, vertical spindle surface grinders, gap type demagnetizers, segment chucks, abrasive wheels and other equipment.

633—Bodine Corp.
Drilling, tapping and screw inserting machine; drilling and tapping machine equipped with six drilling and six tapping spindles; hopper-fed, power driven screw driving machine.

611—Boye & Emmes Machine Tool Co.
New 25-in. lathe designed for tungsten carbide tooling and featuring new design bed.

313—Bridgeport Safety Emery Wheel Co.
Improved hydraulic vertical surface grinder; new hydraulic automatic cut-off machine.

47A—The Bristol Co.
Multiple-spline socket cap and set screws; hex socket cap and set screws.

505—Brown & Sharpe Mfg. Co.
New machine tools including milling machines, grinding machines and screw machines and attachments; machinist's tools.

525—Bryant Chucking Grinder Co.
Automatic Internal Grinders suitable for jobs such as ball bearing races, and other small parts.

123—Bryant Machinery & Engineering Co.
(See Cleereman Machine Tool Co.)

616—Buffalo Forge Co.
Billet shear; new locomotive

Booth No. Exhibitor

spring punch and shear; vertical bending rolls; combination punch, shear and bar cutter; floor drill; new special tool room and production machine.

158—Buhr Machine Tool Co.

Multiple spindle drill heads; double-end drilling machine; bench type tapper, double column drill press.

314—Bullard Co.

New 3-spindle horizontal lathe; new high-speed multiple-spindle machine tool; positioning spacer for radial drill; improved vertical turret lathes.

317B—Bunting Brass & Bronze Co.

Standard and special cast bronze bearings; importance of oil groove location; metallic ores from which bearing bronzes are made; special sleeve bearing.

409—Burg Tool Mfg. Co.

Floating tool holders; plain floating holders; non-releasing sliding tap; holders; quick change floating holders; special holder for small drill presses; photographs showing operation of tools.

655—Carboloy Co.

Standard cutting tools; carbide boring bars; shapes for resisting wear in machinery; sheet metal dies and punches; wheel dressers; carbide rods; lathe centers; milling blades; twist drill tips; grinding cones; model tool grinding department; free grinding service on cabide single point tools used at show.

36—Carborundum Co.

New grinding wheel, with new type of ceramic or vitrified bonding in which new type of abrasive grain is used.

225—Carlton Machine Tool Co.

Carlton radial drills.

36B—Century Electric Co.

New design flange machine tool motors; fractional and integral hp motors.

649—Chicago Drillet Corp.

Four-position drilling and tapping turret head; six-sided leaf type jig box; speedchanger attachment.

35G—Chicago Rivet & Machine Co.

Automatic rivet setting machines including single and multiple setters; application of tubular and split rivets.

425—Chicago Screw Co.

Socket screw products; special, hardened and ground screw machine parts; cast iron and steel valve tappets; screw machine assemblies.

47C—Chicago Wheel & Mfg. Co.

New metallic-sheathed, grinding wheel; incorporating basic improvements in the bond.

514—Cincinnati Bickford Tool Co.

New radial drill; two types of upright drilling machines; jig boring machine; portable horizontal drilling machine; precision drilling machine. All new or improved.

413—Cincinnati Gilbert Machine Tool Co.

522—Cincinnati Lathe & Tool Co.

New series of light motor-driven geared head engine lathes; two new machines with tracer control for lathe work.

220—Cincinnati Planer Co.

Improved vertical boring and turning mill; improved double

• NMTBA General Manager—Tell Berna, Cleveland

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Booth No. Exhibitor

housing planer; improved hydraulic openside planer; electronic drive planer type milling machine.

417—Cincinnati Shaper Co.

Shapers and accessories; press brakes and applications; improved squaring shear with new gaging equipment.

14A—Clark Controller Co.

Special machine tool electrical control panels with accessories:

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• NMTBA Secretary—Mrs. F. F. Selbert, Cleveland.

Booth No. Exhibitor

push-button stations; special electronic timer.

11—Clearing Machine Corp.

Straight side double crank press, 175-ton Clearing press, double action hydraulic press, non-flex presses and press drive assembly.

123—Cleereman Machine Tool Co.

New electronic control jig borer; new single unit sliding head upright drilling machine; round column and box column high-speed, heavy duty drilling machines.

510—Cleveland Automatic Machine Co.

New electric drive automatic turret machine; new hydraulic die-casting machine.

132A—Cleveland Hobbing Machine Co.

Hobbing machines, featuring gear hobbers.

428—Cleveland Planer

Planers.

328E—Commander Mfg. Co.

Drills mounted and operating in various types of presses; cutaway model of drill; standard spindles and adaptors; new 8-spindle drill.

617—Cone Automatic Machine Co., Inc.

New 6-spindle bar machine; chip removal with carbide tools on 4 and 6-spindle lathes; new multiple spindle bar machine.

423—Consolidated Machine Tool Corp.

636—Covel Mfg. Co.

Improved hand feed and hydraulic surface grinders; improved cutter and tool grinders; twist drill grinders.

54C—C. C. Craley Mfg. Co.

Line of offset boring heads and combination boring, turning and facing heads.

157—Cuno Engineering Corp.

271—Cushman Chuck Co.

New line of air-operated power chucks, air cylinders and control equipment; wrench-operated chucks; collet chucks.

39A—Cutler-Hammer Inc.

Complete controllers, manual magnetic, and electronic; control accessories; control components; new diaphragm type timer; magnetic control panel for machine tool operation.

531—Davenport Machine Tool Co., Inc.

Automatic screw machines with new, welded steel bases, along with tool setups of standard tools manufactured as regular attachments.

201—Davis & Thompson Co.

Improved continuous rotary double-end type milling machines; vertical 8-spindle continuous drilling machine; vertical 12-spindle continuous drilling machine.

14C—Dayton Rogers Mfg. Co.

Metal stamping in small lots service; hydraulic overload pitmans; new press bed hydropneumatic cushion.

328G—Dayton Rubber Mfg. Co.

New cog belt; V belt; wire cord belt; connector type V belt; double angle, oilproof and fractional hp belt; rayon cord in belts.

118—Defiance Machine Works, Inc.

Horizontal boring mill; new universal milling attachment; pow-

Booth No. Exhibitor

dered metal presses; special machines.

622—Denison Engineering Co.

Gang installation of four 1-ton presses; press equipped with new dial feed table accessory; new delivery pumps; press assembled for horizontal use.

527—DeVlieg Machine Co.

Two Jigmils introducing new method for machining parts requiring boring; new cutting tool for operations requiring extreme accuracy; accessories for machines to replace jigs and fixtures.

37—DoAll Co.

New automatic segregator; new saw blade; cutting tools; band saws; files; cutting oils; lubricants; machine tool accessories.

34A—Dore Mfg. Co., Inc.

New wire straightening and cut-off machines; new wire pay-off reels; wire wagons.

36A—Dow Corning Corp.

Silicone insulation on motors and transformers; Silicone grease, engineering materials and paints; Silicone rubber.

160—Eastern Machine Screw Corp.

Screw-thread cutting equipment; new and standard die heads; threading machine; chaser grinder.

603—Eclipse Counterbore Co.

Cutting tools and holders; standard interchangeable counterbores and countersinks; special tools; cutting work on castings and forgings.

35E—Elgin National Watch Co., Sapphire Products Div.

Sapphire burnish-sizing tool for powdered metal bearings to bring bearings back to shape after staking operations.

648—Enco Mfg. Co.

Thirty models of turret toolposts; tailstock turrets and hex-turrets.

47E—Engineers Specialties Div., Universal Engraving & Colorplate Co.

New optical projection comparator; gaging fixtures; equipment for inspecting turbine blades; production parts inspection by optical projection; optical projection equipment.

37B—Everede Tool Co.

New offset boring heads; new lathe turning tool; jig boring bars; lathe turning tool holders; lathe boring bars; tool holder.

518—Ex-Cell-O Corp.

New precision thread grinder; automatic tool grinder; automatic piston boring machine; small form precision grinders; vertical precision cylinder boring machine; automatic grooving and chamfering machine.

438—Fafnir Bearing Co.

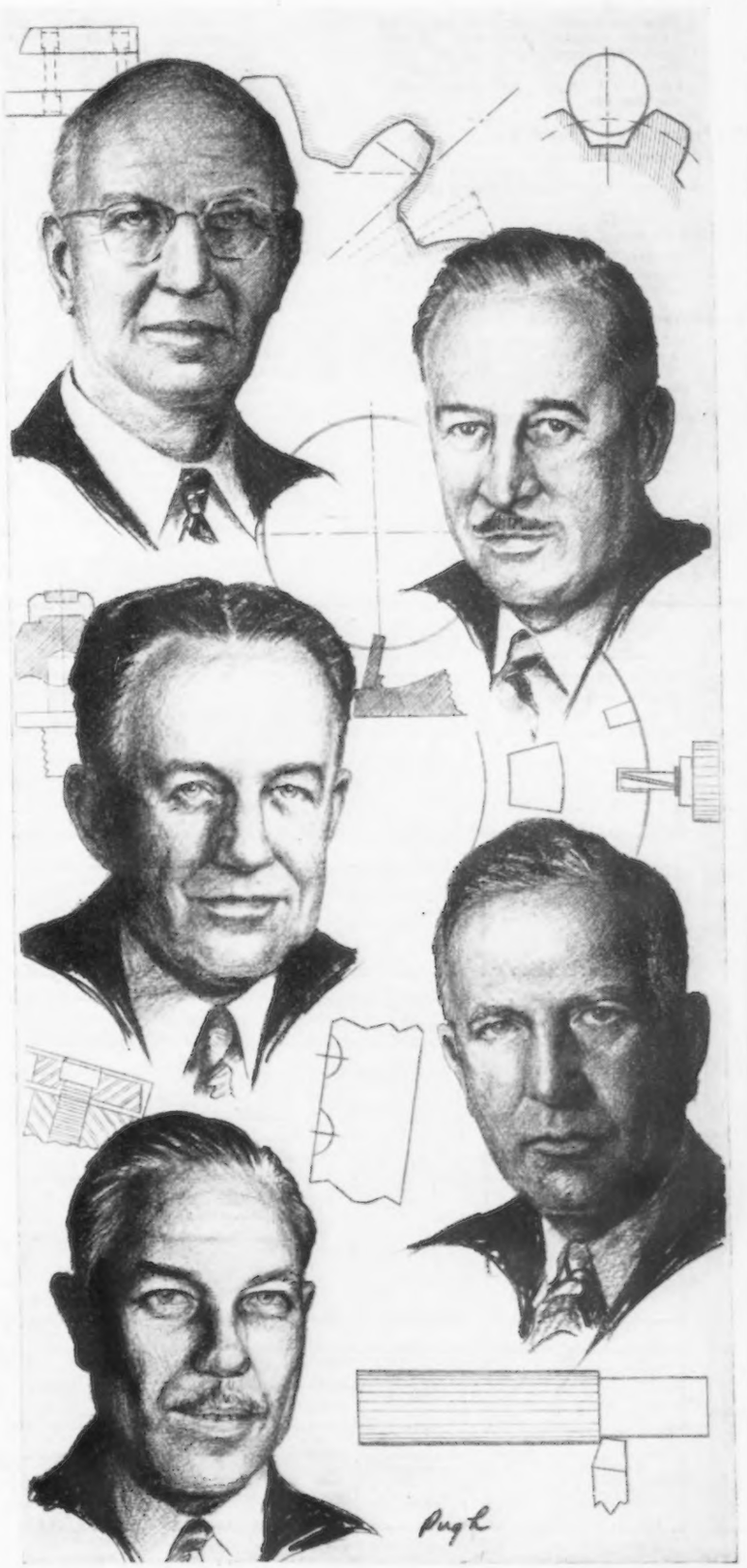
New super-precision ball bearings for spindles; newest types of sealed ball bearings; cutaway spindles; new double-row width bearings.

33A—Fairbanks Morse & Co.

Machine tool applications of new axial air-gap motor.

446—Federal Electric Products Co.

Magnetic motor starters with manual or automatic reset overload relays to control power circuits.



• NMTBA Directors (reading from top to bottom)—A. M. Johnson, president, Barnes Drill Co.; H. W. Bockhoff, president, National Automatic Tool Co., Inc.; H. L. Tigges, vice-president, Baker Brothers, Inc.; F. W. McIntyre, president, Reed-Prentice Corp. and W. L. Dolle, president, Lodge & Shipley Co.

Booth No. Exhibitor

47—Federal Products Corp.

New indicating micrometer; snap gages; bench thickness gages; improved small hole gages; combined air and dial indicator gage; electronic automatic sorting gages.

107—Fellows Gear Shaper Co.

New gear shaper; gear measuring and testing equipment; gear sharpening machine; samples of work produced.

35D—The Felters Co., Unisorb Div.

Illustrations of materials for machine mounting without lag screws or bolts.

412—Fitchburg Engineering Corp.

Photographs showing special purpose milling and boring machines designed for high production.

564—Fitchburg Grinding Machine Corp.

Plain cylindrical, continuous multi-spindle drum type automatic and double Bowgage grinders.

Booth No. Exhibitor

51—Foote-Burt Co.

A vertical surface broacher, four-spindle sensitive drilling machine, a radial drill and surface grinders.

15—Fosdick Machine Tool Co.

New light radial drill; new upright drill; improved hydraulic radial drills; single purpose sensitive drill; heavy-duty sensitive drill; sensitive radial for small work; improved jig borer.

33C—Furnas Electric Co.

Electric motor controls for machine tools motors to 10 hp; new series 1 hp controllers for medium industrial or work shop equipment.

230—Gallmeyer & Livingston Co.

Hydraulic-feed surface grinders; hand-feed surface grinders, universal and tool grinders; universal cutter and tool grinders; twist drill grinder; tap grinder; combination drill and tap grinder.

Booth No. Exhibitor

429—Gardner Machine Co.

New grinders; standard disk grinders; abrasive disks and wheels.

302B—Gay-Lee Co.

A new carbide slitting saw engineered to reduce tool breakage.

670—Gear Grinding Machine Co.

New oscillating grinder; constant velocity universal joints; overrunning clutch; flexible coupling.

240—General Electric Co.

New induction motor, new feed-traverse gear-motor drive; new induction frequency converter; machine tool transformers; plugging switches; electronic positioning control system.

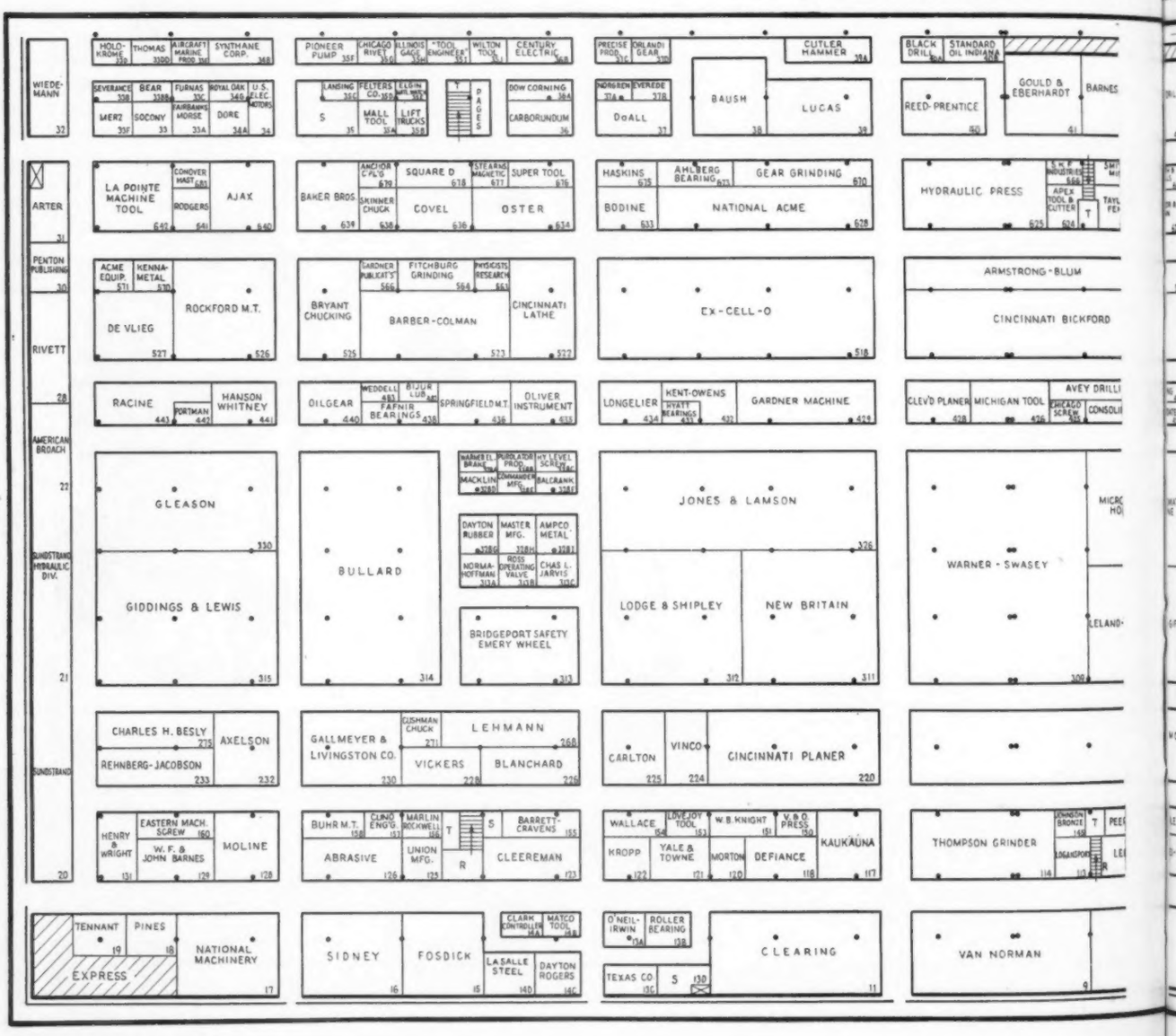
110—General Machinery Corp., Niles Tool Works Div.

Machine tool models; animated descriptions of products and facilities.

50—Geometric Tool Co.

Improved convertible self-opening

Floor Plan of the 1947 Machine Tool



Booth No. Exhibitor

die head; new ground thread chasers.

315—Giddings & Lewis Machine Tool Co.

New milling and boring machines; new precision way grinder; improved horizontal boring, drilling and milling machines; improved accessories; attachments.

304—Gisholt Machine Co.

Several new and improved lathes including turret types; finishing attachments; static balancing machine; special turn milling machine; chucks and accessories.

405—Gits Bros. Mfg. Co.

Line of oilers, oil and grease seals and lubricating systems, including constant level oiler and high speed oil seal.

330—Gleason Works

Bevel gear generators, roughers, planers, tool sharpeners, grinders, burnishers, lappers, cutter sharpeners and other items will be shown.

Booth No. Exhibitor

605—Goddard & Goddard Co.

Standard and special milling cutters; form and profile cutters; multiple thread milling cutters; inserted blade cutters; railroad cutters; boring tools and reamers; solid body carbide tipped cutters.

2—George Gorton Machine Co.

Two-dimensional pantograph machine; super-speed vertical mill; Swiss-type automatic screw machine; 3-dimensional pantograph; routing machine; improved duplicating milling machine; new horiontal plain type milling machine.

41—Gould & Eberhardt, Inc.

Improved shapers with 16 ram speeds and helical gear drive; electrified gear hobbing machines; machine attachments.

421—Goss & deLeeuw Machine Co.

Automatic chucking machines.

501—G. A. Gray Co.

New horizontal boring, drilling and milling machine; new open-side planer cub; new heavy duty

Booth No. Exhibitor

double housing planer; new unit milling head.

53—Greenlee Bros. & Co.

Six-spindle automatic screw machine; explanation of automatic transfer processing machine; new hydraulic way-type unit.

141—Hall Planetary Co.

Precision thread and form milling machines; hardened steel toughness testing instrument; new arbor with two locating diameters.

612—Hanchett Mfg. Co.

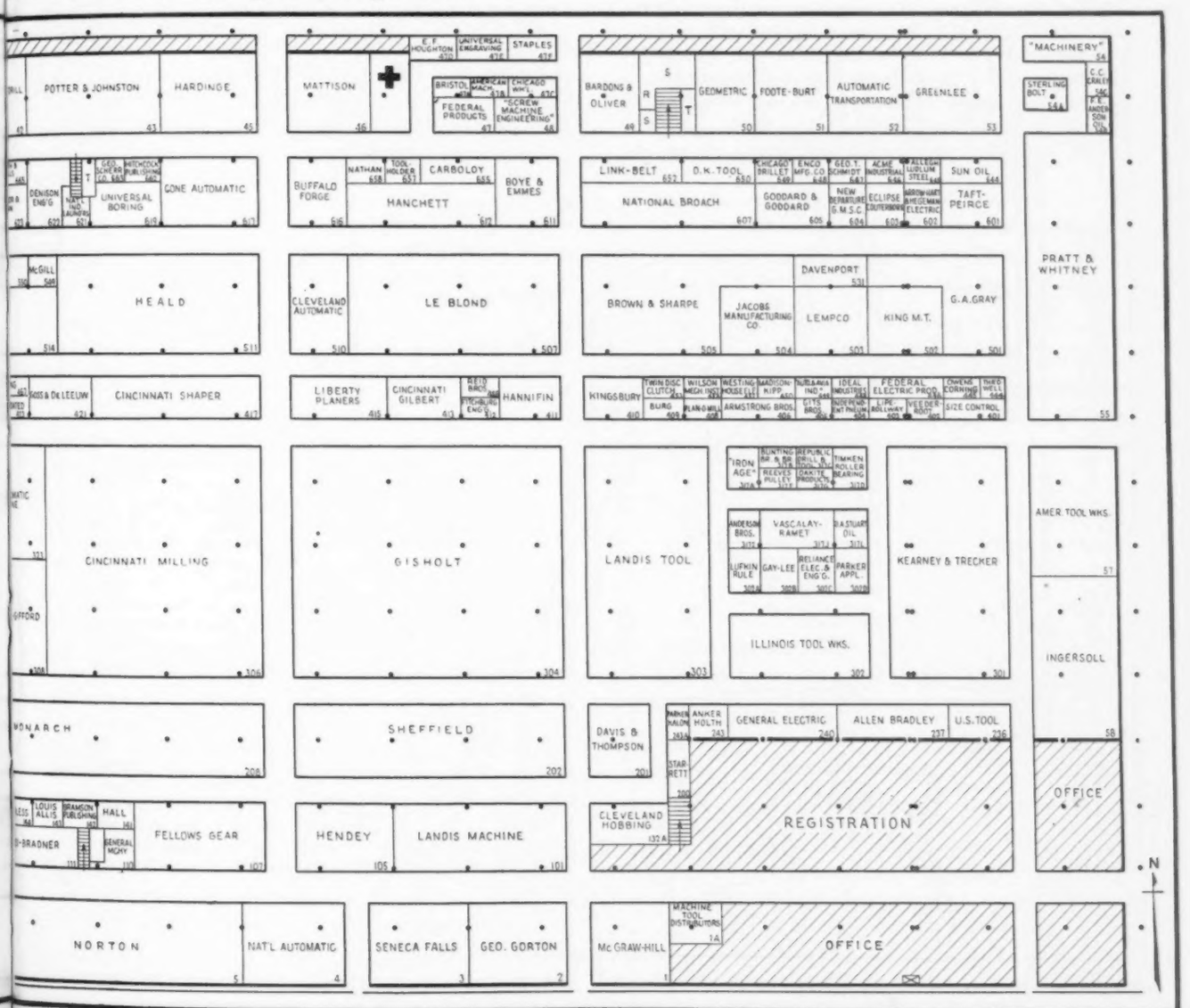
Double spindle grinder, reciprocating table production surface grinders, automatic production surface grinder and a new duplex rotary production surface grinder.

411—Hannifin Corp.

Hydraulic straightening press; bench type hydraulic press; press pressure control; portable hydraulic riveter; portable hydraulic punch; utility press; hydraulic multiple piercing unit; hy-

(*Continued on page* 198)

Exhibition at the Dodge-Chicago Plant



1947 MACHINE TOOL SHOW

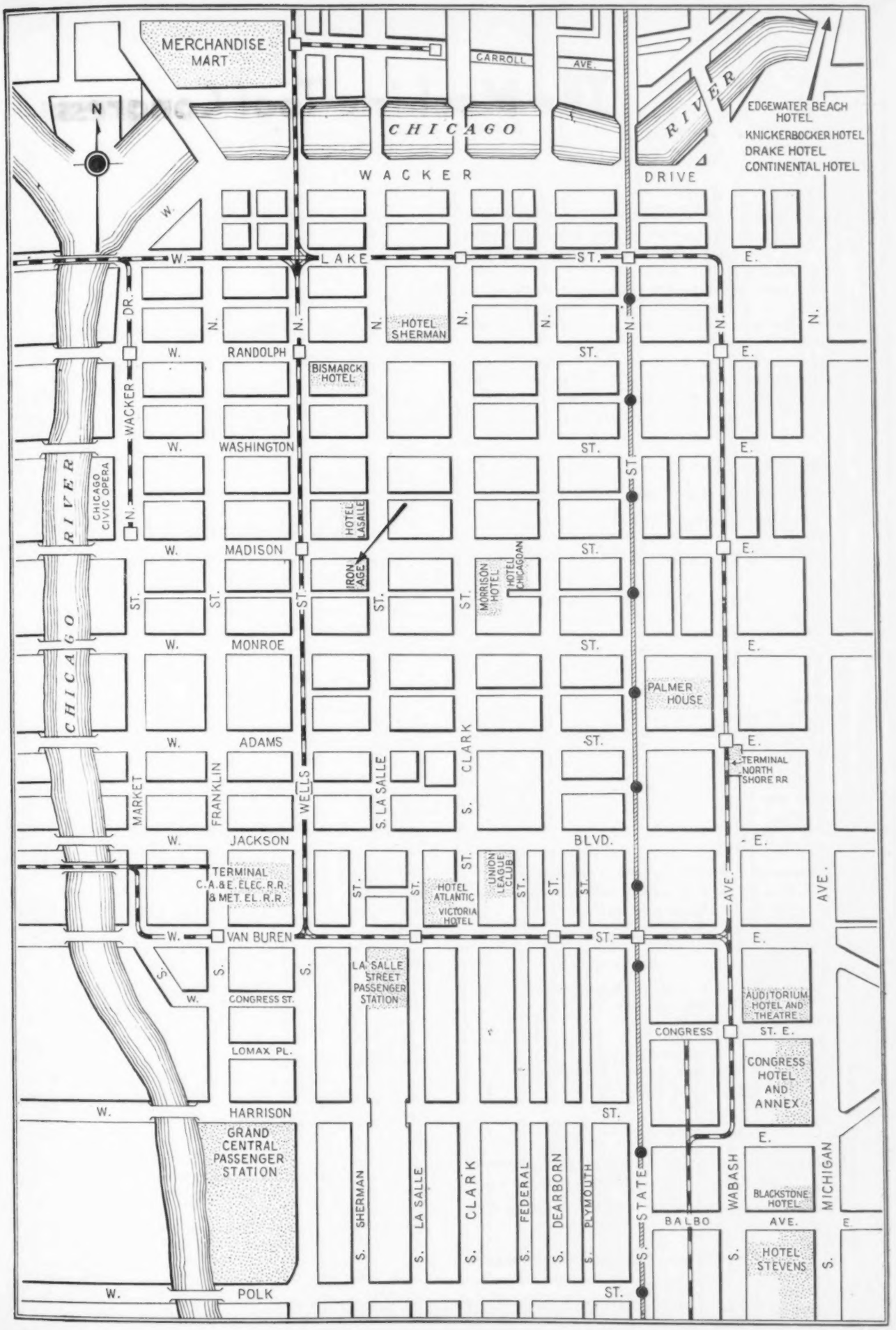
Handy Street Guides to Chicago and Vicinity

How to get to the Show. .

VISITORS to the 1947 machine tool show and congress in Chicago will find the two street maps, shown on this and the facing page, handy guides for locating hotels in the loop area and for driving to the show from the loop. The technical and social meetings featuring the machine tool congress will be held in loop and near-loop hotels, easily located by the large street map to the right. A schedule of the technical meetings and dinners featuring the congress program is given on page. . . . The tool show itself will be held at the Chicago-Dodge plant, some 12 miles southwest of the loop district, as shown in the map below. The preferred route for driving from the loop to the show is indicated on the map below. Highways from southern Illinois and Indiana leading to the show are also shown on the map. Visitors without private cars will be able to use a fleet of special buses, chartered by the show sponsors, which will run from prominent loop hotels nonstop to the show. The staff of the Chicago office of THE IRON AGE, located at 10 S. LaSalle St., (phone Franklin 0203), will be available for assistance and information throughout the show.

THE map to the left shows the location of the Dodge-Chicago plant where the machine tool show will be held. Heavy dotted lines on the map indicate the route to the show recommended by the AAA for visitors driving private cars. This route is less congested than the other roads. In driving to the show, visitors should drive along Cicero Ave. to the southern end of the plant, then turn to the left to the parking area.

The map to the right covers the downtown loop area of Chicago and shows the locations of major hotels and terminals. The heavy dash line is the loop elevated system, while the shaded line on State St. is the subway line. Buses going direct to the show will leave from loop hotel at regular intervals.


MERCHANDISE MART
CARROLL AVE.
CHICAGO
RIVER
EDGEWATER BEACH HOTEL
KNICKERBOCKER HOTEL
DRAKE HOTEL
CONTINENTAL HOTEL
WACKER DRIVE
N.
W.
LAKE ST.
E.
DR.
WACKER
RANDOLPH
WASHINGTON
MADISON
MONROE
ADAMS
JACKSON
VAN BUREN
HOTEL SHERMAN
BISMARCK HOTEL
HOTEL LASALLE
IRON AGE
MORRISON HOTEL
HOTEL CHICAGOAN
PALMER HOUSE
TERMINAL NORTH SHORE RR
CHICAGO CIVIC OPERA
RIVER
CHICAGO
MARKET
FRANKLIN
WELLS
S. LA SALLE
S. CLARK
BLVD.
AVE.
TERMINAL C.A.&E. ELEC. R.R. & MET. EL. R.R.
HOTEL ATLANTIC
VICTORIA HOTEL
UNION LEAGUE CLUB
LA SALLE STREET PASSENGER STATION
CONGRESS ST.
LOMAX PL.
HARRISON
POLK
GRAND CENTRAL PASSENGER STATION
AUDITORIUM HOTEL AND THEATRE
CONGRESS
CONGRESS HOTEL AND ANNEX
BLACKSTONE HOTEL
BALBO AVE.
HOTEL STEVENS
S. SHERMAN
S. LA SALLE
S. CLARK
S. FEDERAL
S. DEARBORN
S. PLYMOUTH
S. STATE
S. WABASH
S. MICHIGAN

1947 MACHINE TOOL SHOW CHICAGO SEPT 17-26

The Machine Tool Congress

A program of outstanding speakers and timely technical subjects has been arranged for the machine tool congress, which will be held concurrently with the tool show. Congress meetings will be held in the evening, as shown in the program below. In addition to the meetings listed in this program, a formal dinner of welcome to visiting executives from overseas will be held at the Palmer House, Tuesday evening, Sept. 23. Charles J. Stilwell, president, Warner & Swasey Co. will serve as toastmaster.

Schedule of Meetings—

Sept. 17—Wednesday

American Machine Tool Distributors' Assn.

Hotel LaSalle: Dinner 7:00 p.m.; Meeting 8:15 p.m.

Presiding:

George Habicht, Jr., president, American Machine Tool Assn., and president, Marshall & Huschart Machinery Co.

Presentation of certificates of membership to: W. F. McCarthy; J. Roy Porter; J. W. Wright and J. Sauer, Jr.

Speakers:

K. H. Hobbie, president, Machine Tool Congress, and vice-president, Driver-Harris Co., Chicago.

H. H. Pease, president, National Machine Tool Builders Assn., and president, New Britain Machine Co.

"Democracy With a Gun in Her Ribs,"by Fulton Lewis, Jr.

Sept. 18—Thursday

American Society of Mechanical Engineers, Production Engineering and Machine Design Divisions

Continental Hotel: Dinner 6:30 p.m.; Meeting 8:00 p.m.

Presiding:

W. G. Miller, Manager, headquarters mfg. dept., Westinghouse Electric Corp.

Speakers:

"Form Grinding," by J. I. Wilson, Thompson Grinder Co., Springfield, Ohio.

"Fabricated Construction in Machine Tools," by J. E. Lincoln, president, Lincoln Electric Co., Cleveland.

Sept. 19—Friday

Joint Session: American Society of Tool Engineers and American Foundrymen's Assn.

Hotel Sherman: Dinner 6:30 p.m.; Meeting 8:00 p.m.

Presiding:

F. J. Schmitt, director of sales, D. A. Stuart Oil Co., Ltd., Chicago.

Speakers:

"Turning Points in the Metalworking Industry," by M. S. Curtis, assistant director of engineering, Warner & Swasey Co., Cleveland.

"When and How to Use Cast Iron," by T. E. Eagan, chief metallurgist, Cooper-Bessemer Corp.

Sept. 22—Monday

National Electrical Manufacturers Assn.

Palmer House: 8:30 p.m.

Presiding:

R. S. Edwards, president, NEMA, and president, Edwards & Co.

Speaker:

"Mass Production and the Tool Industry," by C. F. Kettering, research consultant, General Motors Corp., Detroit.

Sept. 23—Tuesday

Chicago Technical Societies Council

Civic Opera Building: Dinner 6:30 p.m.; meeting 8:00 p.m.

Presiding:

Gustav Egloff, president of the council and director of research, Universal Oil Products Co.

Speakers:

Welcome Message, by K. H. Hobbie, president, Machine Tool Congress, and vice-president, Driver-Harris Co., Harrison, N. J.

"Machine Tools and the Philosophy of Production," by G. Habicht, Jr., president, Marshall & Huschart Machinery Co., and president, American Machine Tool Distributors' Assn.

Sept. 24—Wednesday

American Society of Mechanical Engineers

Continental Hotel: Dinner 6:30 p.m.; meeting 8:00 p.m.

Presiding:

C. H. Simmons, Yarnell Waring Co., Chicago.

Speakers:

"Practice and Theory in Carbide Milling," by Michael Field, Cincinnati Milling Machine Co., Cincinnati.

"Recent Developments in Carbide Application," by J. R. Longwell and F. W. Lucht, Carboloy Co., Detroit.

Sept. 25—Thursday

Society of Automotive Engineers

Knickerbocker Hotel: 7:30 p.m.

Presiding:

Stephen Johnson, Jr., SAE vice-president for production activity, and assistant sales manager, Bendix Westinghouse Automotive Airbrake Co., Elyria, Ohio.

Speakers:

C. E. Frudden, SAE president, and consulting engineer, Allis-Chalmers Mfg. Co., Milwaukee.

"A Trip Through the Machine Tool Show," by Joseph Geschelin, Detroit editor, "Automotive Industries," Detroit.

Dr. Boston weighs today's cutting tools and techniques against tomorrow's needs.

Metal Cutting Techniques

By O. W. BOSTON

Professor and Chairman, Dept. of Metal Processing,
University of Michigan,
Ann Arbor, Mich.

WHEN we visit the machine tool show next week we anticipate seeing tools of all sizes, types, shapes and colors. New features of operation, such as multiple and variable speed and feed drives, involving electronics, hydraulics, variable-pitch diameter pulleys for belts to give greater ranges in infinite steps, new materials and new treatments of metals for resistance to friction and wear, new methods of automatic lubrication with cleaned oil, means of chip disposal and, finally, machines of greater mass and weight, with more and higher powered motors will undoubtedly be shown. All these features we expect to see, together with greater ease of operation, better safety for the operator and machine, and greater automaticity of operation.

We well remember when the sintered carbide tools were first introduced into manufacturing plants. They were not the expected success because of the limitation of speed range, power and rigidity of the machine tools on which they were to serve. Improvements in design are being made constantly.

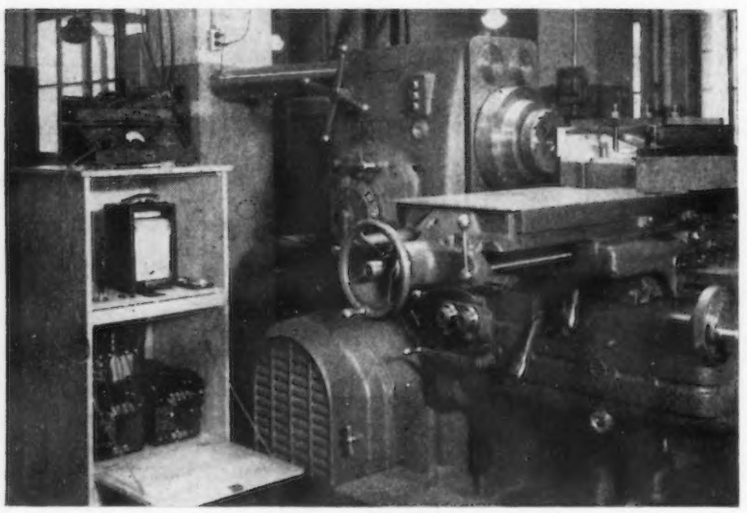
When we refer to the greater productivity of the modern machine tool and particularly of those to be seen at Chicago, we must also look further still, for the production of the best machine tool without proper cutting tools, fixtures and cutting fluids and their proper application and proper materials to be machined, can still fall far short of highest potential output.

The best performance is obtained only when the material to be machined is in the best possible condition for machining. This involves product design and metallurgy. The tool engineer must make certain that the best type, size and form of tool material, and rigid, free-clamping fixtures and tool holders are used. The processing engineer should select the size and shape of cut and the type and application of cutting fluid. Failure to provide the best of any of these units may give output far short of the machine's maximum.

Many examples are available which show that the work of several machines could be done by only one if the proper setup were made. The cost of these tools, fixtures, cutting fluids, etc., is nearly always much less than that of the machine tool and yet it determines the output of the tool. This indicates that these accessories and their application deserve a great deal of attention. This becomes particularly acute if the new machines have all the improvements we expect and, as a result, are high in cost.

What are the improvements in cutting tools which will keep their productivity in line with the new machines? Until a sintered carbide with a higher tensile strength and greater ductility is developed for general use, better performance seems to be possible chiefly through the improvement in rigidity, tool shape, speed of cut, ratio of cut (depth to feed), and the quick and accurate replaceability of the worn tip in the holder. Research on cutter and machine performance is being continually carried out. Fig. 1 is a gen-

eral view of a milling machine setup for determining gross and net power, tool wear, and surface quality, as tool shape, number of teeth, diameter of cutter, size and width of cut, and flywheel action for various metals machined when in-cut and out-cut milled. A single bit is shown mounted in the cutter body, in turn attached to the face of the flywheel. An end view of the test bar mounted in the rigid welded fixture is shown on the table. The profilometer and recording wattmeter with transformers for the spindle and feed motors are shown at the left. A toolmaker's microscope and camera are available for determining and recording the wear on the tools. Only minor improvements in the carbides are looked for, but their application as mentioned above offers opportunities to challenge the improvements inherent in the machine.



IG. 1—Typical of research being done today on cutting techniques is this milling machine setup for investigating tool behavior.

Where size of cut is limited, multiple tooling may be resorted to in order to absorb the power available. The greater rigidity of milling machines will permit more general use of the more productive in-cut milling (see fig. 2). The war years added much to our knowledge of applying these tools. Rakes for cutting materials giving discontinuous chips for brass and cast iron (also the light metals) are found to give the highest speed-tool life constant for positive values of 3° to 8°, while steel performs best with negative rakes of 5° to 7°, or with tools ground with a ridge back of the cutting edge at negative 5° to 9° with a width of 1½ times the feed, backed by a positive rake of from 15° to 30°. This provides a lip angle greater than 90° to accommodate the carbide of high compressive strength but low ductility, and yet allows the chip to flow freely over the built-up edge supported on the ridge. Negative rake angles are definitely beneficial for intermittent cuts to prevent chipping of the cutting edge. At the start of each cut the impact of the work falls on the face of the carbide tool back of the cutting edge rather than on the cutting edge itself. Fig. 3 is a face mill with inserted blades, showing ASA nomenclature.

Sintered carbide tools must be operated at speeds two or three times those used for high-speed tools, to avoid the chipping of the cutting edge. At speeds below 200 to 250 fpm chipping is probable and the tool life will be less than at higher speeds of 300 to 600 fpm. Cutting fluids are used on carbide tools only when a large supply can be directed on the continuously cutting tool. For intermittent cuts in turning or in milling, cutting fluids are deleterious and reduce tool life. The intermittent cooling causes frequent wide temperature changes and the carbide will develop cracks (heat checks) at right angles to the cutting edge. These cracks lead to chipping. Light feeds of less than 0.003 in. cause chipping and feeds of 0.005 in. to 0.012 in. are more satisfactory.

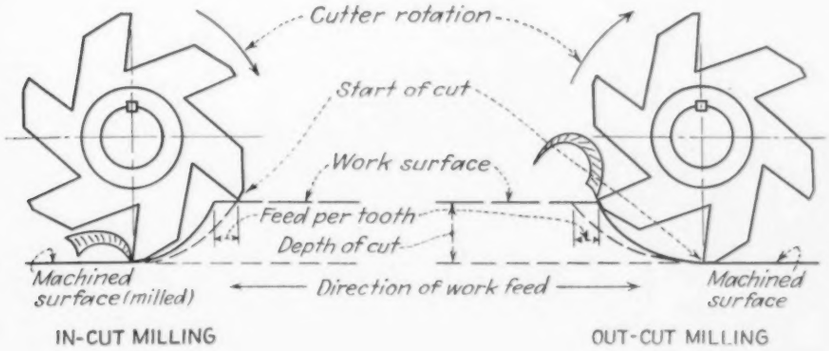
Only in precision turning or boring where a hard grade of sintered carbide is used are light feeds permissible. Rigidity, light cuts, with low forces, high speeds and keen cutting edges are required for this high degree of dimensional accuracy (0.0001 in.) and surface quality of 1 to 15 microinches, rms. Feeds for roughing are 0.010 to 0.020 in. (depths of cut 0.020 to 0.060 in.); for semifinishing 0.005 to 0.010 in. (depths 0.010 to 0.020 in.), and for finishing cuts 0.001 to 0.005 in. (depths 0.005 to 0.10 in.). Average speeds recommended by Alden[1] for roughing, semifinishing, and finishing, respectively, are 600, 800 and 1000 fpm, for nonferrous metals, 250, 300 and 400 fpm for cast iron, and 300, 350 and 450 fpm for steel.

Sintered carbide tools normally fail by cupping and flank abrasion in all machine operations. Several researchers concluded that a flank wear of 0.030 in. width below the cutting edge was sufficient to justify regrinding and therefore can be considered a fair commercial tool life. At this point the temperature of cutting and the power developed have increased. The wear should occur on the work-shoulder flank rather than the nose flank as the latter will cause a change in dimensional accuracy and surface finish. In precision turning and boring, dimensional changes of only 0.0001 or 0.0002 in. could normally be allowed before exceeding the tolerances on the work piece.

As sintered carbides operate efficiently at high speeds when turning steel, straight continuous chips are formed. These are hot and sharp. They may become involved with the tool or holder and otherwise become unsafe for the operator. These chips may be controlled in a path of escape or made to break up by (a) a suitable combination of rake angles, depth and feed; (b) a clamped-on chip breaker of a hard metal against which the chip strikes as it leaves the tool face, and (c) by grinding a chip breaker or shelf into the face of the carbide tool so that the shelf be-

[1] *See* THE IRON AGE, *July* 31, 1947, *p.* 50.

comes the new tool face and the shoulder back of the shelf becomes the breaker to deflect, break or curl the chip. A single-point tool with bit clamped in a bent tool holder, with nomenclature and a key for designating angles is shown in fig. 4. The angular shelf-type of chip breaker is shown in a carbide tipped tool in fig. 5. The angle *A* is zero if the tool is used for cuts of variable depth. For shallow cuts angle *A* may be as high as 45° to prevent the end of the shoulder from forming the machined surface.



AT LEFT

FIG. 2—Graphical view, with nomenclature, of in-cut and out-cut milling.

o o o

BELOW

FIG. 3—Face mill with inserted blades, showing ASA nomenclature.

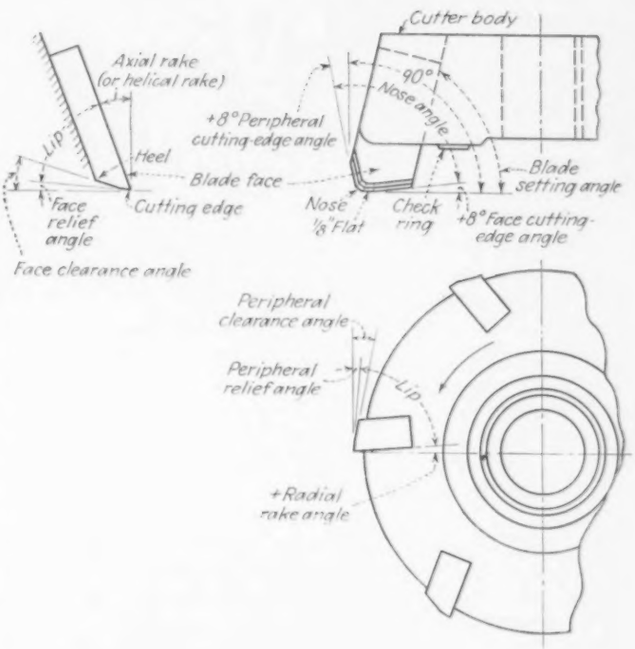
Ridge- or groove-type chip breakers are also used on carbide tools, as less carbide must be ground away to leave the ridge to support the built-up edge.

We probably will see carbide tips brazed in a prepared slot in the shank as well as a number of other methods recently devised. The tips may be brazed on the top face of the shank with only one, or no shoulder, as less tip breakage occurs with this procedure. Tips will be brazed to the face of a bit in turn clamped interchangeably to a shank. Tips will be clamped mechanically to the shank, the clamping plate serving as a chip breaker. Solid square-sectioned bits will be clamped in tool holders at a low back rake angle so that only the end of the bit is ground for resharpening. Solid cylindrical bits of a diameter corresponding to a desired nose radius, as well as solid bits of other shapes, will be seen clamped in the end of a shank so it is tangential to the work and the ground end of the bit forms the tool face. This end may be ground concave to form a rake, leaving a narrow flat ridge equal to 1 to 1½ times the feed, just inside the cutting edge.

Face milling cutters, particularly, have likewise been improved during the past few years to provide positive and accurate means of holding a variety of shapes of solid and carbide tipped bits which can be removed in short order. In one cutter the teeth or blades are ground cylindrically on the flank when held in a grinder body and then are transferred to the cutter body and so held with proper relief for cutting. The so-called masonry and Hi-Rockwell drills are also made with carbide inserts for the chisel edge and cutting edges, and twist drills and taps are made of solid carbide.

Considerable improvement in turning-tool holders, a part of the machine tool, may be looked for. These should hold the tool shank more rigidly in the proper fixed position to the work and make it possible to replace tools quickly and accurately. In large production machines, the whole tool post, with its set of tools, may be taken from the machine to be replaced quickly by another, containing its tools, properly reconditioned in the grinding room. All tools can in this way be set to correct position by gages before being placed on the machine.

The use of high cutting speeds to secure good



surface quality is increasing. Diamonds or sintered carbides must be used to withstand these high speeds at light depths. The nose radius or flat on the tool end must be coordinated with the feed to eliminate the tool feed marks. Tools of cast nonferrous alloys may be used on those materials which are more easily machined.

Marked improvements have been made in some of the cast tungsten-cobalt-chromium alloys. The new Stellite may now be used for heavy feeds and cuts on steel as well as on brass, bronze, cast iron, hard rubber, etc. These tools yield results between those of high-speed steel and sintered carbide.

A new high-cobalt high-speed steel is now heat treated to give a hardness and performance well

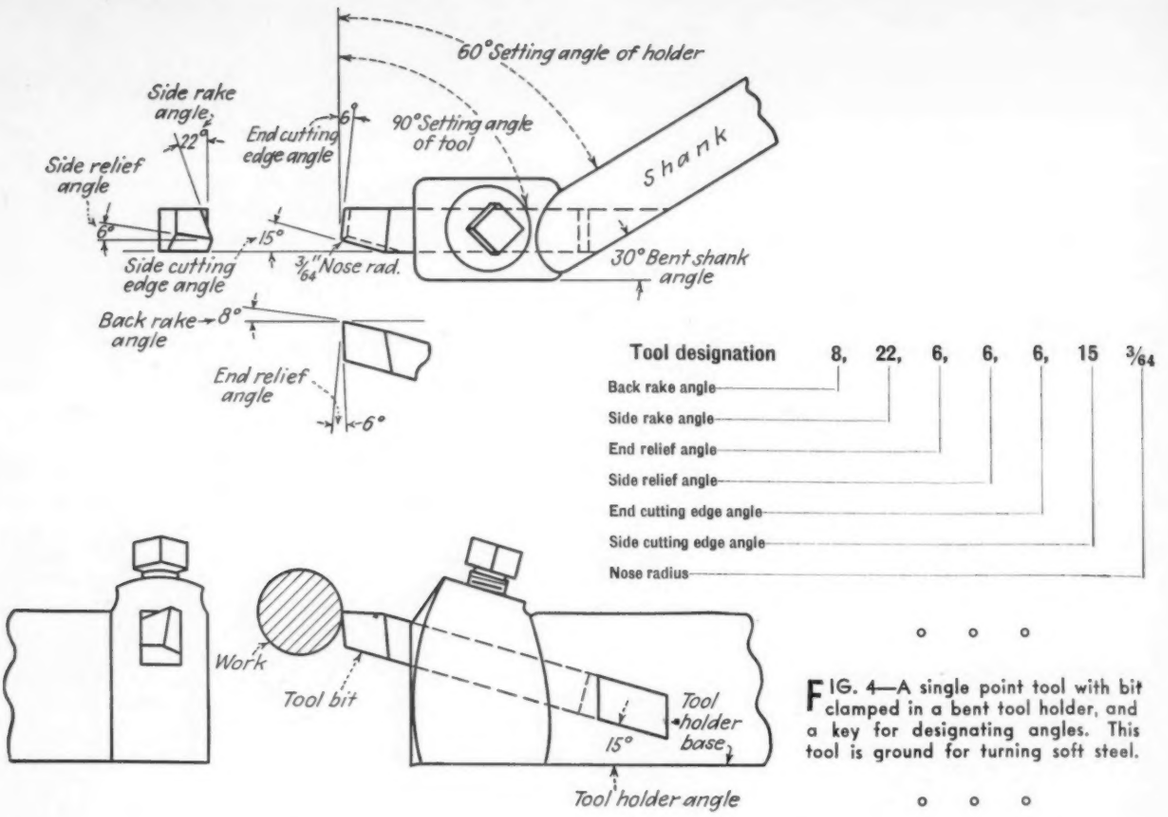


FIG. 4—A single point tool with bit clamped in a bent tool holder, and a key for designating angles. This tool is ground for turning soft steel.

above those of the usual high-speed steels. Limited reports of an outstanding nature have been made on them. The high-speed steels are still the backbone of production, as they are strong, less temperamental in performance, and when used with proper cutting fluids, are consistent ground gainers. The new, more powerful machines will probably be tooled with these tools for most unusual jobs.

Many so-called surface treatments have been developed and are used to improve various types of high-speed steel. Nitriding tungsten and molybdenum types of high-speed steel tools (previously hardened and tempered) is carried out in a liquid bath consisting of a mixture of sodium cyanide and potassium cyanide salts at 1025° to 1050°F, for a period varying from 15 to 40 min. Finishing tools require the shorter times. All types of tools have shown greatly increased tool life because of this treatment. Those tools below proper hardness are greatly benefited by such treatment.

Flash chromium plating has also proved effective on many jobs. Both nitrided and plated tools treated on the face should be reground on the flank only or else be retreated after each grinding. Fine finish grinding is recommended prior to both treatments.

Liquid honing, or vapor blast, is a new process developed to improve the performance of high-speed steel tools and some very favorable performance data have been obtained for tools so treated. The honed tools are smooth and the cutting edge is without burrs. A surface oxide treatment has been found to be beneficial in many cases. The oxide-coated flutes of drills and taps provide free passage of chips because of the low coefficient of friction.

Peening with steel shot plastically to deform the surface layer of the tool introduces compression stresses to increase fatigue resistance. In some instances tool life is increased. The deep-freezing of steel tools after tempering, at a temperature of —110° to —120°F for 2 hr to complete the transformation of austenite to the harder martensite, followed by a second tempering, improves the performance of tools not properly hardened originally. This treatment has also been of value in bringing 0.0002 to 0.0004 in. undersize component parts up to accepted size by a 24-hr treatment at —70°F.

The new machine tools of all types will probably be equipped with the means of applying cutting fluids to the tools in large quantities, from 5 to 100 gpm. Large settling tanks for the accumulation of chips and dirt should be provided. Separators of the gravity, centrifugal or magnetic type should be installed on the multiple operation machines with temperature control to keep the cutting fluid at a constant near-room temperature.

It requires about 0.4 hp at the cutter or 0.8 hp at the motor to remove each cubic inch of cast iron. With larger motors on the new machines it seems logical to expect more multiple tooling or heavier cuts or higher speeds. The total power at the motor equals the horsepower per cubic inch per minute at the motor, times the cubic inches removed per minute. For magnesium the power at the motor per cubic inch per minute is about 0.3, for aluminum about 0.5 and for steel from 0.8 to 1.2. These values are changed but little with or without application of cutting fluids, or with variation in cutting speed. They will be higher, however, if the feed is reduced to give thinner chips and reduced for heavier feeds.

In those machining operations in which very thin chips are removed, the unit power at the

motor is very high, for example 5 to 15 for finish broaching steel, 15 to 30 for band sawing steel, and 20 to 50 for grinding steel. With the large metal removal the problem of chip disposal becomes important.

Cutting fluids, important factors in successful production, are of two general types, oils and water-oil emulsions. Improvements in both have been made during the year. Additives to both types in the form of sulfur, chlorine, graphite and fats, have been developed to increase materially the production or tool life, surface quality and desirable chip form. The more effective application of a cutting fluid in large quantity and at high velocity on the chip and tool is becoming general practice. A great deal of progress has been made by controlling the temperature of the cutting fluid. It has been found that the cutting speed can be increased about 18 pct by cooling an oil from 150° to 70°F, and about 10 pct by similarly cooling an emulsion. The most effective temperature to apply cutting fluids at is from 70° to 85°F. At lower temperatures oils become too viscous and fats in emulsions are liable to congeal. Of late the transparency and sanitary stability of cutting fluids have been emphasized. Oils made with antiseptic properties, minus "BO," and even of a color pleasing to the operator, are generally advertised.

Cutting tool grinders should have a conspicuous place in this exhibit, as with tools improperly shaped and finished the new machines could not produce as intended. Emphasis is placed on machine-grinding cutters to produce goemetrical accuracy and a fine surface quality of 1 to 15 microinches.

Diamond abrasive wheels are being used increasingly to finish carbide tools. These wheels are made in several grades of resinoid, vitrified and metal bonds, each with diamond grit sizes from 60 to 500. The vitrified bonded diamond wheel is now proving superior to the others. For wet rough grindings, grits of 80 or 100 are recommended, such as D100-L100 V 1/16, or a silicon carbide abrasive wheel of 60 grit in a medium soft grade, such as 39C60-17V. For wet finishing, diamond wheels of 80 to 220 grit or finer such as D220-N100V 1/8 are used, or silicon carbide wheels of 100 or 120 grit of medium soft grade. Tools for machining aluminum and magnesium should have the best finish and a keen cutting edge. A coolant or oil should be used with these diamond wheels to keep them cutting freely and to prevent the tools from being overheated. In regrinding carbide tools, it is imperative that all cracks and flaws be completely removed.

For sharpening the cast nonferrous high-speed and carbon steel tools, the aluminum oxide, free-cutting, wheels such as Norton 32A54-K5VBE, or equivalent, are used. Again, correct form, keen cutting edges and smooth surfaces are of the greatest importance.

The combination of the best of all these variables applied to each specific job and machine tool would increase production and reduce costs far in advance of our present practice. Everyone engaged in manufacturing must be on constant lookout for new machines, better tools and improved methods. When we consider all the various processes of metal removal by sharp cutting tools, such as turning, milling, drilling, broaching, grinding and sawing, to name only a few, the task of keeping abreast of the best practice becomes really challenging.

It is interesting to read of other methods of cutting metals, such as that developed recently in Russia.[2] The machine resembles an abrasive wheel or friction disk saw. The disk is copper-plated low-carbon steel, preferably not more than 170 mm diam and 0.5 to 0.8 mm thick, rotating at 750 rpm. A cutting fluid consisting of water glass of 1.32° to 1.34° Be density serves as an electrolyte. The axle of the disk and the vise holding the work piece are connected to a circuit of about 18 v dc and 80 to 100 amp. The disk axle is connected to the negative terminal. The circuit is closed by lowering the rotating disk upon the work flooded with the water glass. With slight pressure this gives rise to an electric discharge which produces so-called electric-erosion. Sintered carbides, hardened high-speed steel and structural steels may be cut in this manner in times comparable to those of sawing, but the process is somewhat more expensive.

[2] *See "Electro-Erosion Cutting of Hard Metal and Steel," by T. P. Rekshinskaya as reviewed in the Engineer's Digest, July* 1947, *p.* 305.

Radical changes in the process of removing metal with sharp tools are not to be expected. However, improvements all along the line are going to make the new machine tools to be seen at Chicago of greater productive capacity.

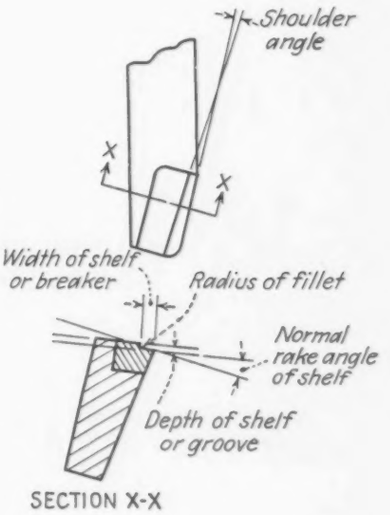
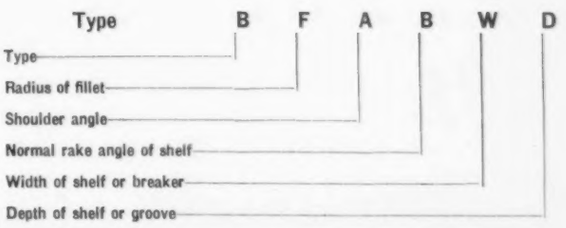


FIG. 5—Sketch of an angular, shelf-type of chip breaker in a carbide tipped tool, with nomenclature.



Machine tool users tell, in this Iron Age survey, what they think of depreciation policies, WAA sales, future buying, tool prices and design features.

o o o

By O. L. JOHNSON
Director of Research,
THE IRON AGE

o o o

Machine Tool Users Answer 18 Timely Questions

RISING material and labor costs are emphasizing anew the important role played by the machine tool industry in maintaining an economic balance in industry by counteracting those rising costs with machine tools of ever greater productivity. The Chicago machine tool show, coming as it does at a time when interest in increasing productivity is at a peak, will serve to give industry a new conception of what modern tools can achieve in boosting productivity.

Coupled with the mechanical improvements in the machines themselves, the metalworking industry faces a number of other corollary problems, problems which must be solved if full utilization of the potentials of modern tools are to be realized. Among these problems are, How is the purchase of new tools to be justified? What savings are necessary before a purchase is made? Is a change in depreciation policies necessary? Is employee objection to new tools anticipated? What is the opinion on present machine tool prices? etc.

In an effort to show the trend of thinking of machine tool users on these and other pertinent questions, The Iron Age conducted a poll in which 18 questions were put to machine tool users. The enlightening answers received from 560 plants are presented in this report. These answers came from plants embracing all types of products (except machine tools . . . machine tool builders were not polled) and from plants rated at $200,000 and up. The survey is a cross-section of the relatively more important part of the domestic machine tool market, sufficient in size to indicate what the attitude of industry as a whole is on these questions of machine tool buying policies during the year ahead.

The Questions and Answers to The Iron Age Machine Tool Survey

1

The Question:

Would you consider the purchase of more-productive new machine tools for replacing otherwise serviceable machines? In other words, when does a company replace its old machine tools with new ones?

The Answer:

488 companies said "Yes."
72 companies said "No."

560 companies reporting.

• These answers mean that 87% of the companies would consider replacing machines when they become less efficient than newer machines even though the old ones are still serviceable and have not been completely written off. Some manufacturers pointed out that the desire to replace machine tools is modified at times by the cash position of the companies. An obsolete machine kept in operation too long after the appearance of something better is hardly a good asset—on the books or in the shop. One manufacturer described it this way, "We follow a policy of purchasing new machine tools every year. The decision to purchase a particular machine is based, not only on the cost savings which may accrue, but also on increases of capacity and increases of accuracy. Obviously, if the present equipment on hand is not able to produce the quantity and the quality of work which are required, it is necessary to replace that equipment."

2

The Question:

If you would replace existing machine tools before they are actually worn out physically, how much savings in per cent of cost of new machine tools would have to be shown to induce their purchase? Most companies will consider replacement if cost savings are satisfactory. But how much do they want?

The Answer:

	Pct of Cost of New Machines
50 companies want a saving of	**10 pct in one year.**
30 companies want a saving of	**15 pct in one year.**
136 companies want a saving of	**20 pct in one year.**
122 companies want a saving of	**25 pct in one year.**
128 companies want a saving of	**33 pct in one year.**
72 companies want a saving of	**50 pct in one year.**
22 companies want a saving of	**100 pct in one year.**

560 companies reporting.

• A thought suggests itself from these answers that if a machine pays for itself in 3 to 5 years out of savings, why take 15 to 20 years to pay for it on the books in depreciation reserves? Some of the companies indicated that the lower range of 10 to 15 percent savings relates to standard types of machine tools, and the higher range from 20 percent up relates to special production types of machines. The exact types of machines in each specific case have something to do with the spread in the range of savings desired, but could it be that the methods of figuring the savings also have something to do with the spread?

3

The Question:

On what basis do you figure these cost savings?

The Answer:

In presenting the answers to this question no attempt was made to classify them into similar groups as it was thought best to present the answers in the same form as originally received. Typical of the answers received are:

Savings in direct hours only.

Savings in direct labor and material.

Savings in direct labor and applicable factory burden.

Savings in direct labor plus 1/3 of overhead rates.

Increased production and (or) quality.

Gross labor saving less annual fixed charges.

Unit cost of operation differential.

New machine cost minus salvage of old, divided by 3.

Direct cost.

Savings in direct labor and maintenance.

Believe present machines will be obsolete in 10 years.

Paying off in savings in 4 years.

Attempt to offset wage increases with machine savings.

Must have a 35 pct reduction in total manufacturing cost over a year's period, and this must equal at least 10 pct of cost of new machine.

Savings in direct labor plus 150 pct overhead rate.

Guesswork.

Reduction in direct labor, material, maintenance, overhead, spoilage and rework minus the increase in depreciation represented by new facility.

• These different ways of figuring machine tool cost savings indicate that it would be highly desirable if machine tool users would adopt a standard method of computing savings. The various percentages of savings desired are not comparable and do not mean much when different methods of figuring are used. With machine shop overhead at 150 to 300 pct of the direct labor rate, it makes quite a difference whether or not this overhead is one of the factors in the computation. In the interest of attaining the usage of a standard method of figuring machine tool cost savings the last method listed above for figuring cost savings is used by a prominent metalworking plant, and it looks like a good model to adopt throughout the industry.

4

The Question:

Would a change in depreciation policy under present income tax regulations induce you to buy more new machine tools if you were permitted to set up your own rates of depreciation higher than the present 6 or 7 pct year?

The Answer:

306 companies said "Yes," they would buy more machine tools.
206 companies said "No."

512 companies answered this question.

• Some of the companies that said "No" really believe in a higher rate of depreciation, but they have already purchased quite a number of machine tools, and so at the present nothing would induce them to buy more on a large scale. At a later date many of these "No" companies would say "Yes." Confirmation of this is seen in the next question.

5

The Question:

Would a higher rate of machine-tool-cost write off be a good thing for your company in helping you make more money, reduce the price of your product, improve the physical condition of your plant, etc.?

The Answer:

370 companies are in favor of a higher rate of write off.
142 companies are opposed to higher rate of write off.
512 companies answered this question.

• With close to 75 pct of the metalworking companies favoring a higher-than-6-pct "write-off" per year on machine tools, it seems strange that a higher write off had not become standard practice long ago. When income taxes were lower many years before the war the 6 pct write-off was in rather common usage, and so it isn't wholly the fault of the Internal Revenue Department that present income tax regulations impose barriers to the indiscriminate adoption of high write-off rates. One manufacturer said, "On our books we already use higher rates." This emphasizes the fact that manufacturers could employ a higher write-off rate if they would set up separate depreciation schedules for different classes of machine tools, and thus convince the Revenue Department that the problem was being worked out scientifically and that higher rates were needed on certain machines. This approach, as opposed to haphazard rate raising, would go a long way in obtaining the consent of the Revenue Department. Machines thus amortized at a high rate should be disposed or when written off and not be continued in service afterward. It would be a good thing to employ higher rates of write-off wherever possible because in an economy of rising prices over the years, the depreciation reserves at the end of long-term amortization periods fall far short of replacing the machines thus amortized.

Another manufacturer pointed out that, "in cases where machinery is made obsolete by later designs, yet cannot be amortized for tax purposes, the same can be sold and establish a loss which will permit the purchase of new machines. However, liberalization of write off would be beneficial in many cases."

Here are a few more comments from metalworking companies in regard to question No. 5:

"We believe in this, but can't say we would make more money, but we would be in a more healthy condition in depression periods."

"Three considerations are involved in this question. Higher rates mean less book profit. Lower rates mean higher costs. Yes, we would buy more modern equipment, prices being a factor however."

"Usage of machine is a factor to consider in a depreciation reserve program. One company may have a 20 pct. usage of the machines over a period of years.. Another may have 100 pct usage, or more if multiple shifts are employed. In a few years the machines of one company would still be OK (if newer models haven't made them obsolete) whereas, the machines of the other company would be physically worn out through usage."

6

The Question:

Do your employees oppose the installation of new machine tools which reduce manpower requirements or which replace manually operated machines with automatic machines?

The Answer:

506 companies said employees do not oppose.
54 companies said there is some opposition.

560 companies reported.

• Several companies reported that "employee opposition to new machines usually is serious only when employment is low. Ordinarily the workers like new machines and prefer to work on them. The changes in piece-work rates can usually be compromised satisfactorily."

7

The Question:

If your employees object to new machines does this opposition deter you from buying new machine tools?

The Answer:

In the preceding question it was shown that only 54 companies out of 560 reported opposition by their employees and in most of those cases the opposition was slight. Below is a further breakdown of the 54 companies.

48 companies said employee opposition does not deter buying new machines.
6 companies said this opposition does deter them.

54 companies reported opposition, mostly slight.

• It will be recalled that in the early 30's during the depression, there was considerable opposition to the installation of new machine tools, and that opposition did deter many prominent companies from buying new labor-saving equipment. Consequently many manufacturers are doing a good relations job with their employees just now whenever major purchases of new machine tools are made so that employee understanding will be promoted.

8

The Question:

Do you think that present prices of new machine tools are high or about right in relation to the prices of other products, including your own?

The Answer:

356 companies said machine tool prices are too high.
204 companies said machine tool prices are about right.

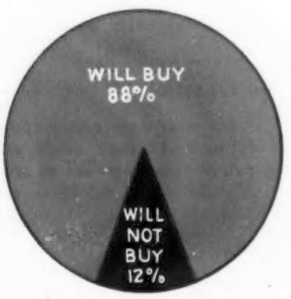
560 companies reported.

• Among the machinery (not machine tools) builders who supplied information, it was noticeable that a much larger percentage of companies in this group said that machine tool prices are about right, as compared with the opinions of other types of manufacturers. Perhaps this is because machinery builders have a better appreciation of the cost of building machinery. One company said, "The question of price takes care of itself because if a machine can't earn its way, don't buy it." Several said, "Prices are about right for standard machine tools. Too high for special machines." Another said, "Machine tool prices are high, butp robably not out of line with other products as the general price structure is unhealthily high." One company insisted, "Even WAA machine tool prices are too high."

9

The Question:

How much machine tool equipment do you expect to buy in the next 12 months?



The Answer:

Some of the 560 companies that participated in this survey will not buy any because they have just completed their machine tool program. This condition is indicated below:

494 companies *will* buy machine tools in next 12 months.
66 companies will *not* buy.

560 companies reported.

• The individual plant purchases for machine tools reported range from a few thousand dollars to $3,000,000. Most of the individual purchases will range between $30,000 and $200,000. No attempt was made to project this survey sample of 560 companies to arrive at a total purchase figure for the entire major domestic machine tool market. However, a good indication of the demand for machine tools may be gained by comparing the contemplated machine tool purchases of the 560 companies with the purchases made by those same companies before the war in 1940. See next question.

10

The Question:

What were your machine tool purchases before the war in 1940?

The Answer:

IN 1940 THESE SAME 560 COMPANIES SPENT $50,660,000 FOR MACHINE TOOLS.

• By comparing the machine tool purchases by 560 companies in 1940 with the planned purchases for the next 12 months, it will be seen that 42 pct more money will be spent during the coming 12 months than in 1940. Making allowance for the difference in price levels of the two periods, a trend picture from this comparison can be obtained. But with the War Assets surplus machines overhanging the market, perhaps both the users and builders of machine tools would like to know what portion of the contemplated $72,000,000 machine tool purchases will be spent for new machines. See next question.

11

The Question:

Will your purchases be new machine tools or WAA surplus machines?

The Answer:

$57,000,000 will be spent by 560 companies for new machine tools.
15,000,000 will be spent for surplus machines.

$72,000,000 total to be spent by 560 companies.

• The prevailing opinion among machine tool users is that they would like to spend the amount indicated ($15,000,000) for surplus machine tools if the latter are available. The best pickings in surplus machine tools are over, and it is probable that many of the companies will not be able to purchase the quantity of satisfactory surplus machines which they expected. The question, therefore, is whether a scaling down of expenditures for surplus machines will result in more money being spent for new machines or whether the money that can't find the right surplus machines will be withdrawn from the machine tool market. The temper of machine tool buyers in most cases is that they will buy new machines if good surplus machines are not obtainable. Thus it is quite likely that the expenditures for new machine tools by the 560 companies will exceed the proposed $57,000,000.

12

The Question:

How much War Assets surplus machine tools have you purchased thus far?

The Answer:

• Before discussing how much, this is how many of these companies have bought surplus machines and how many have not:

438 companies have purchased WAA surplus machine tools
122 companies have not purchased WAA surplus.

560 companies reported.

To date, 438 companies (out of 560) have purchased surplus machine tools in the amount of $92,100,000.

• A recapitulation of questions 9 to 12 on machine tool purchases by 560 companies shows:

560 companies will spend in next 12 months		$72,000,000
For new machine tools	$57,000,000	
For surplus machines, if available	15,000,000	
	$72,000,000	
560 companies spent in 1940		$50,660,000
560 companies purchased surplus machines to date		$92,100,000

13

The Question:

What influenced you to buy surplus machine tools. Was it availability of machines, 60¢ on the dollar, or other reasons?

The Answer:

310 companies said *availability* influenced them.
248 companies said *price* influenced them.
52 companies said the machines were already in their plants.

• Some companies were influenced to buy WAA surplus machine tools by both availability and price. They expressed it this way, "the right machines were available for immediate delivery at a reduced price and so we bought some." The heaviest buyers of surplus machines were those companies that already had the machines in their own plants as the result of war work.

14

The Question:

Which type of control do you prefer for machine tools—Hydraulic? Electrical? Electronic?

The Answer:

272 companies prefer hydraulic control.
344 companies prefer electrical control.
30 companies prefer electronic control (for certain machines).
94 companies indicated no preference.

740 expressions from 560 companies.

• The reason for 740 expressions of opinion from 560 companies regarding type of control is that 180 companies expressed a preference for both hydraulic and electrical control, depending upon the type of machine tool and the operation. These 180 companies expressed themselves clearly that both types of control have a proper application on machine tools and that both types have their advantages and disadvantages. Electronic control is preferred for a more limited class of machine tool operations.

Regarding the preferred type of control for various types of machine tools, one company said they prefer hydraulic controls for fast feeds where infinite variation of feed is desired; they prefer electrical controls for constant speed motors and feeds, and electronic controls are preferred for rotating spindles with considerable range in speed.

Some companies prefer electronic control for jig borers. Others prefer electronic devices because they say such controls cannot be tampered with, and once set up they remain constant. In general, the reasons advanced by some companies for preferring electrical controls were the same identical reasons advanced by other companies for preferring hydraulic. Some of these identical reasons are: Less maintenance, faster operation, easier servicing, employees are more familiar with, less trouble, and have had satisfactory experience.

15

The Question:

What is your opinion of weldments for machine tool beds, in place of castings?

The Answer:

120 companies prefer castings.
72 companies prefer weldments.
234 companies expressed no preference.

426 companies reported.

• Comments from reporting companies: "Weldments are good if properly designed and stress relieved." "Prefer castings because they are more free of vibration breakage." "Weldments are OK for less-accurate type of machine tools and presses. Not so good for precision machines due to aging changes." Steel is more rigid for same weight." "Prefer castings because of weight." "Prefer weldments for simplicity, castings for appearance." "Have no preference, but cast iron deadens the noise where control of such is necessary."

16

The Question:

Are there any other developments you would like to see in the new machine tools?

The Answer:

Suggestions from companies:

Better accessibility for servicing, and cleaner design for upkeep.

Accessible removable units for maintenance.

More unit sub-assemblies to facilitate repair.

Lighten up paint jobs. Make cleaning easier.

Provide materials handling facilities with each tool for lifting and setting.

Want lighting equipment as part of the machine.

Want built-in motor starters, disconnects, lighting, etc., and adequate wiring and motor accessories space.

Improved safety features.

Would like to see a planer that will also cut on the return stroke.

Simpler machines, especially speed and feed adjustments.

More semi-automatic machines and higher spindle speeds.

Better bearings. Lubrication systems.

Simplified transmission from motor to spindle by means of variable speed motors.

Want automatic control of size.

Want dimensional control instrumentation.

Want meters to show power input under load.

Machine tool builders are doing a good job on developments.

17

The Question:

Do you expect to expand your productive facilities during the next 5 years?

The Answer:

336 companies will expand.
160 companies will not expand.
64 companies can't say at this time.
560 companies reported.

Extent of planned expansion is as follows:

38 companies will expand 10 pct of capacity.
26 companies will expand 15 pct of capacity.
66 companies will expand 20 pct of capacity.
76 companies will expand 25 pct of capacity.
28 companies will expand 35 pct of capacity.

52 companies will expand 50 pct of capacity.
8 companies will expand 70 pct of capacity.
32 companies will expand 100 pct of capacity.
10 companies will expand over 100 pct of capacity.

336 companies will expand.

18

The Question:

What do you think will be he trend of your business for the next 5 years?

The Answer:

292 companies said their business will be *up*.
144 companies said their business will be *same as now*.
78 companies said their business will be *down*.
46 companies couldn't predict.

560 companies reported.

Extent of upward trend in percent is as follows:

44 companies said—up 10 pct
18 companies said—up 15 pct
56 companies said—up 20 pct
66 companies said—up 25 pct
42 companies said—up 35 pct
44 companies said—up 50 pct
14 companies said—up 100 pct
8 companies said—up over 100 pct

292 companies reported up-trends.

• These opinions on the trend of respective business did not develop any particular pattern. They were well diversified as to industry, and in every class where a down-trend was reported there were companies that also reported an up-trend, excepting aircraft. Some companies will expand even though they do not look for an up-trend in their line of business, but they expect to increase their own share of the available business. Other companies will expand because they are adding new products to their lines.

Machine Tool Shipments in 1946 Totaled $327.2 Million

Average monthly shipments of machine tools in 1946, the first full postwar year, were $27,300,000, or nearly twice the 1939 monthly level, but only one-fourth of 1942 and 1943, the peak war years, according to a review of the machine tool industry for 1946, prepared by the Bureau of the Census, Department of Commerce.

The review showed that machine tools valued at $327,200,000, were shipped by 344 companies during 1946. In addition, shipments of $5,300,000 were reported for the light type machine tools designed primarily for home workshops, laboratories, garages, etc.

Total value of lathes shipped during 1946 was more than $103,000,000 or almost one-third of all machine tools for 1946. Next were grinding and polishing machines at $54,000,000, one-sixth of the total. Milling machines accounted for $41,000,000, one-eighth of the total and these three groups represented about 60 pct of the total value of machine tools shipped during 1946.

Over three-fourths of the total value of all machine tools shipped during 1946 were shipped by companies located in Ohio, Illinois, Indiana, Michigan, Connecticut, Massachusetts and Wisconsin, according to the review.

Ohio ranked first with $106,400,000, or one-third of the U. S. total, and Ohio, Indiana, Illinois, Michigan and Wisconsin together accounted for 62 pct of the value of machine tools shipped. Machine tools were produced in 22 states in 1946.

According to the Bureau of Census' review, a total of 53,284 lathes, including light industrial types, valued at $103,500,000 were shipped by 84 companies during 1946. Shipments of 17,868 engine lathes valued at $35,200,000 were reported representing 34.2 pct of the total value of lathes shipped.

Shipments of 2773 automatic screw machines valued at $20,000,000 and 2676 turret lathes valued at $13,000,000 represented 19.3 and 12.9 pct respectively of the total value of lathes shipped.

Ohio, Indiana, Michigan, Illinois, Wisconsin and the New England states accounted for 94 pct of the total value of all lathes shipped during 1946. Ohio led all the states with nearly one-half the national total.

The 55,632 grinding and polishing machines, including light industrial types, shipped by more than 128 companies during 1946 were valued at $54,400,000. More than one-third of all machine tool builders shipped this type of machine, the review showed.

Shipments of 1979 external cylindrical grinding machines valued at $17,300,000 were reported representing 31.8 pct of the total value of grinding and polishing machines.

Shipments of 4936 surface grinding machines valued at $10,500,000 and 4472 tool and cutter grinding machines valued at $5,000,000 were also reported.

Almost one-half the total value of grinding machines shipped during 1946 were shipped from Ohio, Indiana, Illinois, Michigan, Wisconsin and one-third from the New England states. All other states accounted for only 21 pct of the total shipments of grinding and polishing machines. Ohio accounted for one-fourth and Massachusetts 22 pct.

A total of 10,857 milling machines, including light industrial types, valued at $41,400,000 were shipped by 68 companies in 1946. Principal milling machines shipped were the bed and knee types. Shipments of 4931 knee type milling machines (except bench type) valued at $20,300,000 represented 49 pct of the total value of milling machines shipped in 1946.

Shipments of 895 bed type milling machines valued at $9,000,000 accounted for 21.7 pct of the total value.

Almost 75 pct of the total value of milling machines shipped during 1946 were from Ohio, Indiana, Illinois, Michigan and Wisconsin. New England states accounted for 20 pct of the total value of shipments with the rest of the U. S. amounting to less than 5 pct. Ohio led all states with 40 pct of the total value shipped during the year and Wisconsin followed with 23 pct.

Machine Tool Show Exhibitors (CONTINUED FROM PAGE 181)

Booth No.	Exhibitor
	draulic pressure generators; other equipment.
441	**Hanson-Whitney Machine Co.** Universal semi-automatic thread milling machines; rapid precision centering machine; oil groove planing attachment; ground thread taps; multiple cutters; thread gages; lead screws.
45	**Hardinge Bros., Inc.** High-speed precision machine tools and accessories for production departments and tool rooms.
675	**R. G. Haskins Co.** Working exhibits of flexible shaft equipments; attachments and accessories; screwdriving and nut-setting equipment.
511	**Heald Machine Co.** New internal and surface grinders; new Bore-Matics; new tool sharpener.
105	**Hendy Machine Co.** General purpose light duty lathe; and a tool and gagemaker's lathe.
131	**Henry & Wright Mfg. Co.** New dieing machines; drilling machine; automatic power straightener; automatic drum-type reels.
33D	**Holo-Krome Screw Corp.** New flat-head socket cap screws; line of socket screw products.
47D	**E. F. Houghton & Co.** Four new series of cutting oils; lubricants for machine tools; lubrication service for exhibitors; hydraulic packings; leather belting.
433	**Hyatt Bearings Div., General Motors Corp.** High-capacity cylindrical roller bearings; application of bearings to machine tools.
62S	**Hydraulic Press Mfg. Co.** New inclinable hydraulic press; standard metal working press; new zinc diecasting machine; hydraulic pumps, valves and cylinders; new automatic power unit.

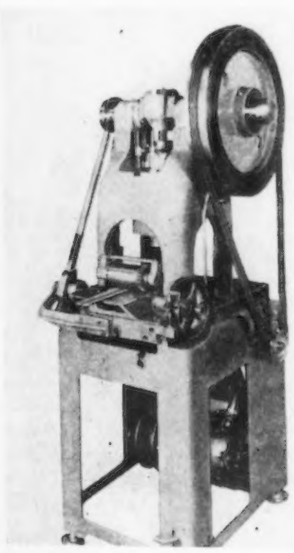
(CONTINUED ON PAGE 274)

New Equipment . . .

Automatic punch and forge shop trimming presses and a series of small mechanical presses, together with hobbing machines, quick-change lathes, upright drills, tapping machines, and an air friction press clutch and brake are described herein. Arcwelders, sanders and polishers, speed reducers and a magnetic separator are included among other equipment.

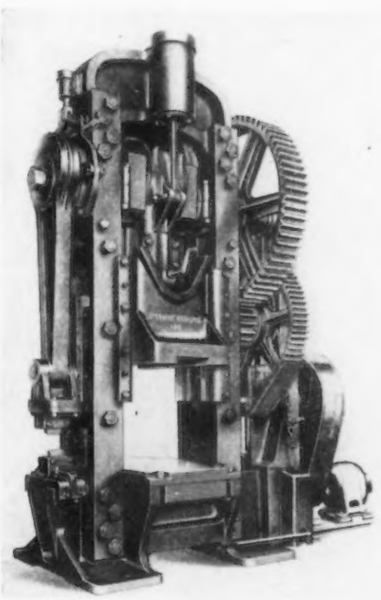
Automatic Punch Press

KNOWN as the Diebel, a 12-ton, high-speed automatic punch press with automatic roll feed and variable speed drive has been introduced by *Di Machine Corp.*, 2711 W. Irving Park Road, Chicago 18. The press accommodates standard die sets measuring to 8½x6¼ in. or special die sets measuring 8x12 in. Shut die height over the bolster plate is 6 in. The adjustable automatic roll feed mechanism operates by means of an eccentric body on the crankshaft and is an integral part of the machine. Stock to 4½ in. wide may be employed and the length of feed is adjustable to 6 in. Accurate feeding is said to be provided for the use of progressive dies as well as for the use of blanking or compound dies. Variable speed drive permits operation of the press between 65 and 300 strokes per min. Standard equipment consists of the press with clutch for single stroke operation, automatic brake release, hardened and ground feed rollers, knock-out bar in the ram, stock guides, motor and starter. Power is supplied by a 1½ hp, 1725 rpm, 220 v, 60 cycle, 3 phase ac motor mounted under the bed. The press is available with a 1, 1½ or 2-in. stroke.



Forge Shop Trimming Press

FORGED steel side frames tongued and grooved to bind the base and yoke into a rigid unit and component parts designed to withstand overloads, are features listed for the steel side press introduced by *Chambersburg Engineering Co.*, Chambersburg, Pa. This type of construction and a friction slip mechanism, which permits the flywheel to expend its energy at predetermined loads, are claimed to make the press practically unbreakable. Designed primarily as a trimming press for forge shop use, the press may also be used for general blanking, preforming, punching, bending and shaping operations. Accessibility to front and back has been attained by arranging the flywheel and gearing at the side of the press. Low power consumption, continuous operation and utilization of minimum floor space are listed as other features. The press is furnished in single crank and double crank models.



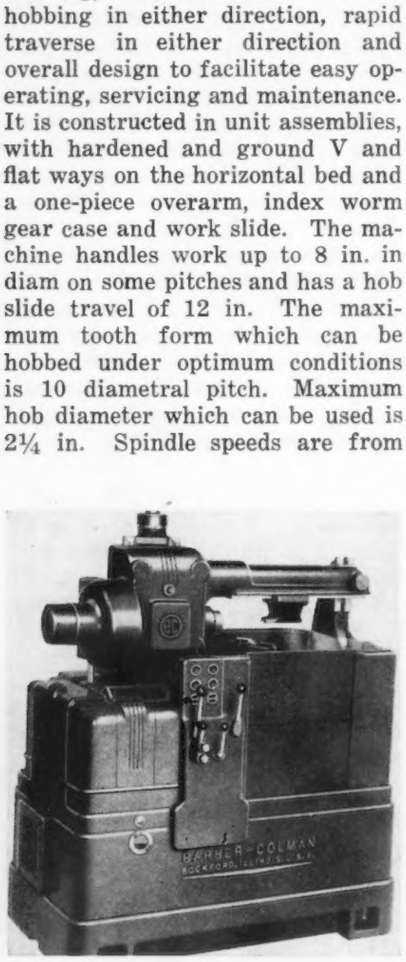
Small Presses

IN announcing its Series S presses, *Clearing Machine Corp.*, 6499 W. 65th St., Chicago 38, is expanding its line to include smaller presses than previously offered. Capacities will range from 60 to 250 tons. Frames are welded steel. Bed widths, right to left, range from 36 to 108 in. in increments of 6 and 12 in. and these sizes may be had with bed depths, front to back, ranging from 28 to 44 in. Stroke lengths are available from 3 to 18 in. and shut heights are available over a range to suit requirements. Slide adjustment is of the barrel type with the screw supported top and bottom in a cylinder. These presses are the double crank type with twin end drive and most sizes

can be furnished either single or double-geared. An air friction clutch is interlocked with a spring-actuated brake. The unit is electrically operated from push-button stations.

Hobbing Machine

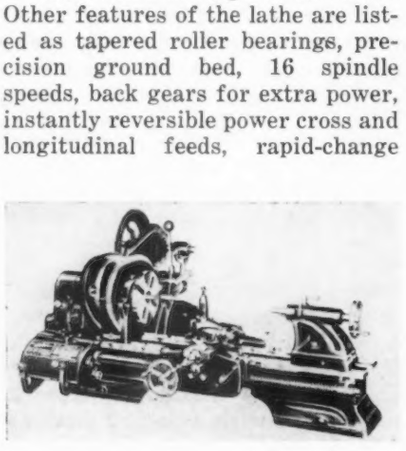
A PRODUCTION hobbing machine, the No. 8-12, has been developed by *Barber Colman Co.*, Rockford, Ill., and features semi-automatic cycling, speed for carbide hobbing, conventional and climb hobbing in either direction, rapid traverse in either direction and overall design to facilitate easy operating, servicing and maintenance. It is constructed in unit assemblies, with hardened and ground V and flat ways on the horizontal bed and a one-piece overarm, index worm gear case and work slide. The machine handles work up to 8 in. in diam on some pitches and has a hob slide travel of 12 in. The maximum tooth form which can be hobbed under optimum conditions is 10 diametral pitch. Maximum hob diameter which can be used is 2¼ in. Spindle speeds are from



150 to 1350 rpm and the feeds per revolution of work range from 0.005 to 0.400 in.

Quick-Change Lathes

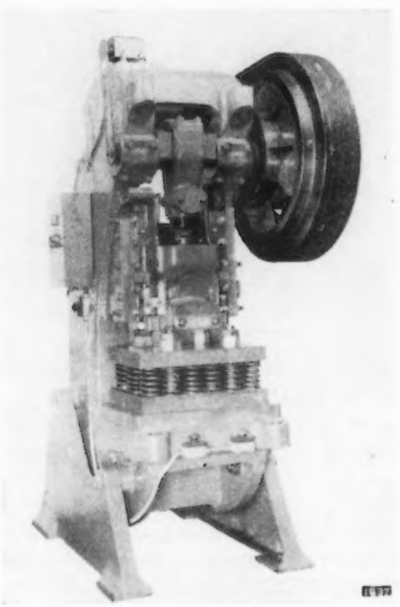
LATHES featuring the Quick-Change mechanism for finger-tip selection of 54 threads and feeds are now available from *Atlas Press Co.*, 2309 N. Pitcher St., Kalamazoo 13D, Mich. Forty-five threads and feeds are said to be obtained by shifting two levers on the gear box, and an additional nine are obtained by changing the position of the sliding gear. The new mechanism is said not to limit the odd thread and feed range of the lathe. Other features of the lathe are listed as tapered roller bearings, precision ground bed, 16 spindle speeds, back gears for extra power, instantly reversible power cross and longitudinal feeds, rapid-change



countershaft. Specifications are given as follows: Swing over bed 10¼ in.; over carriage 6⅝ in.; 16 spindle speeds between 28 and 2072 rpm; thread cutting range, right and left, 4 to 240 per in.; two bed lengths available, capacity 24 and 36 in. between centers; operates from ⅓ or ½-hp 1725 rpm motor.

Air Friction Press Clutch

A DRUM-TYPE air friction clutch and brake developed for the 9-I flywheel-type inclinable press may also be mounted directly on the drive shaft of new or old presses, either flywheel or back-geared types, which are manufactured by the company, according to an announcement by *Cleveland Punch & Shear Works*, Cleveland 14. This clutch and brake is said to have approximately half the number of parts and is about one fourth the weight of conventional-type disk friction clutches. When air is applied to the cylinders, the clutch engages the flywheel and when the air is released, the brake takes effect on the main shaft. In the event of failure in the electric current or air supply, the brake is designed to bring the machine to a stop immediately. This clutch is self-adjusting and may be serviced without removal from the press. Wear is minimized through locating friction surfaces on the same circumference. There is said to be no differential friction, and complete disengagement is effected on idle friction surfaces. This clutch and brake is a combined unit of one-piece construction.



Upright Drill

DEVELOPED to provide a capacity between sensitive and heavy-duty upright drills, a 21-in. upright drill now available from the *Fosdick Machine Tool Co.*, Cincinnati 23, is designed with a gear

box equipped with 9 or 18 speeds and 4 feeds. Any range of speeds from 110 to 900 rpm or 220 to 3600 rpm can be obtained with feeds from 0.002 to 0.010 or 0.004 to 0.020 in. The gear box is cast integral with the top bracket. A pump is placed under the gear box to supply oil to the bearings and heat-treated gears. Drive to the spindles is effected through multiple V belts. Power feed is operated from a positive clutch which operates two serrated blocks engaging in a serrat-

ed ring. An overtake feature is combined with the power feed to permit the drill to be advanced without disengaging the feed dial. A lock-out is provided to prevent the power feed from engaging when it is desired to operate the machine by hand. Unless otherwise specified, standard spindle speeds of 110 to 1800 are furnished and three longitudinal T slots are furnished as standard equipment.

Tapping Machines

A CONTINUOUS flow lubricating pump is one of the features of a new series of universal tapping machines made by *Procunier Safety Chuck Co.*, 18 S. Clinton St., Chicago 6. The Hi-Boy pump is a motor-driven gear type and is said to provide a continuous flow of lubricant to the tap, lubricating while the tap is backing out as well as during the tapping operation. Tap driving and reversing pressures are pre-set by compensating springs which are said to maintain proper pressure to the tap regardless of foot pedal pressure. The machine is available in two sizes: Series A with a capacity from a No. 2 tap up to 5/16 in. in steel, ⅜ in. in cast iron and

½ in. in brass; Series D with capacity from a No. 10 tap up to ½ in. in steel, ⅝ in. in cast iron and ¾ in. in brass.

AC Welders

FEATURING Dial-lectric control which is said to eliminate moving coils or cores, worm gears, sprockets and chain or lever adjustments, a new line of ac arcwelders developed by *Harnischfeger Corp.*, 4400 W. National Ave., Milwaukee 14, is described as not containing a moving part in the machine. Without cranks or plug-in stations, current selection is said to be made by turning a single dial which covers the full welding range in a three quarter turn. Models of this series have a removable control dial for remote control which provides for current amperage adjustment at the job for manual or automatic welding. Another improvement of these welders is the high-low welding

range. Indicated on the control dial are two separate ranges, a high for general purpose welding and another for light-gage welding. These welders are offered in models ranging up to 625 amp.

Arcwelder and Power Unit

AN arcwelder and power unit combination having a full capacity 200 amp rotary ac arcwelder for construction, maintenance, and repair welding, and which includes a simple operated changeover switch to convert the welder generator into a 52 amp, 120 v, 60 cycle, 5kw, 6.3 kva, single phase power unit, has been developed by *Hobart Bros. Co.*, Troy, Ohio. In this machine is not only the ac welder but an ac power unit which will supply sufficient power to operate 50 100w lamps regularly or as an emergency standby power source. It can also be used to operate electric drills, grinders, saws, and other electric motor driven equipment. The GA models are complete, factory-built, gasoline engine driven units; WA

model is for use with available power source, such as gasoline engine, tractor or Jeep power-take-off.

Mild Steel Electrode

AN improved No. 312 electrode described as an all-position, mild steel electrode designed to produce weld metal possessing good mechanical properties and low hydrogen content, has been announced by *Air Reduction Sales Co.*, 60 E. 42nd St., New York. Improvements are listed as application with both ac and dc reverse polarity current with equally good operating characteristics and the elimination of preheating of the electrode to obtain porosity-free weld deposits. Deposits of this nature are said to be obtained by using the stringer bead or the full weave technique. Recommended uses are welding high-sulfur, free machining steels; hardenable steels where no preheat is used; cold-rolled steels which normally exhibit excessive porosity when welded with conventional electrodes; weldments to be vitreous-enameled after welding. Low hydrogen content is said to make possible the production of satisfactorily enameled surfaces without heat treatment prior to enameling.

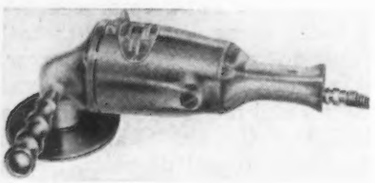
Chatterless Countersinks

ADDITIONS to the line of chatterless countersinks have been announced by *Severance Tool Industries, Inc.*, 726 Iowa Ave., Saginaw, Mich. Countersinks having 60° angle with the center line are now made standard in nine sizes up to 1-in. diam. They are also available in cemented carbide in sizes up to 1½-in. diam and in

the same standard angles as for high-speed countersinks. Chatterless countersinks with threaded bodies have been added in sizes of 1-in. diam and larger with body dimensions the same as for standard countersinks having integral shanks. The manufacturer states it is possible with threaded body countersinks to mount direct to the user's adapters or to the tapered shank and straight shank adapters or arbors in various sizes offered by the company. The new countersinks are described as featuring shear-cutting teeth, staggered both as to spacing and shear-angle which precludes chatter and results in faster cutting of seats with superior finish.

Sanders and Polishers

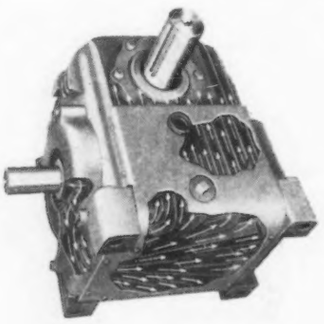
UTILIZING a design for cooling the motor and tool grip, Kool Grip portable disk sanders and polisher are being manufactured by *Bradford Machine Tool Co.*, Cincinnati 4. A baffled air intake through the rear handle assures a large volume of clean, cool air over the motor, with the



air being directed away from the operator. At the same time, the air intake is said to keep the handle cool and provides the operator with a comfortable grip on the tool. The top plate on the handle is removable for cleaning the air baffles. Use of double reduction gears permits a small spindle gear, and decreases centrifugal force. Three models are produced: 7-in. heavy-duty sander, 9-in. standard-duty sander and 7-in. polisher. Standard motor is a universal 110 v ac-dc motor.

Fan-Cooled Speed Reducers

A LINE of fan-cooled speed reducers with removable shields designed to direct fan impelled air over the finned lower portion of the speed reducer housing has been announced by *Michigan Tool Co.*, 7171 E. McNichols Road, Detroit 12. Air is said to be directed in such a manner that equalized air-flow is obtained at all points of the housing requiring cooling. The fins are located and shaped in a manner to obtain maximum cooling efficiency. The basic units of the fan-cooled reducers are said to be the same as standard heavy-duty pinion-under reducers manufactured by the company so that units in ser-



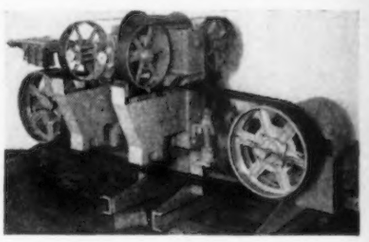
vice may be converted with the addition of the fan and air-flow control shields. Horsepower ratings apply equally to mechanical or thermal ratings and have not been increased over the mechanical ratings specified for equivalent size non-fan-cooled units. The use of removable shields is said to make the entire housing accessible for cleaning and operation of the reducer in another location without fan cooling.

Mechanical Overload Protector

AN electronic device for use in conjunction with an electric motor driven machine to trip at any preset mechanical load increase above normal has been marketed as the Protectron by the *Brinnell Co.*, Grandy, Conn. The device is described as instantaneous in action, sensitive to minute overloads, adjustable to any degree of overload within practical limits, and providing automatic compensation for fluctuations in terminal voltage. When the device trips, a red warning light is illuminated and a relay is energized to initiate any desired control function, using auxiliary equipment. It is said to stop the motor, stop the machine by operating the clutch or brake, increase or decrease voltage on motor, or sound a warning signal. By tripping at a preset degree of dullness, the instrument is claimed to enforce sharpening of tools and increase tool life up to 600 pct. It is also listed for use on automatic screw machines, die machines, broachers, presses and to force mechanical elbow releases instantly on single feed presses.

Magnetic Separator

A CROSS belt type magnetic separator has been fabricated by *Magnetic Engineering & Mfg. Co.*, Clifton, N. J., for the concentration of "feebly" magnetic ores, the removal of contaminating magnetic specks and iron oxides from chemicals, powders, etc., and for the segregating of magnetic and nonmagnetic materials where extremely clean products are required. Known as the MEMCO-Wetherill type magnetic separator, the machine embodies the same general principles of magnetic separation of the old type Wetherill separator, but has been improved in design. The main conveyer belt can be changed without disturbing any other part of the separator and the magnetic gap adjustments are made by raising or lowering the lower pole pieces and not disturbing the top magnet. Standard equip-

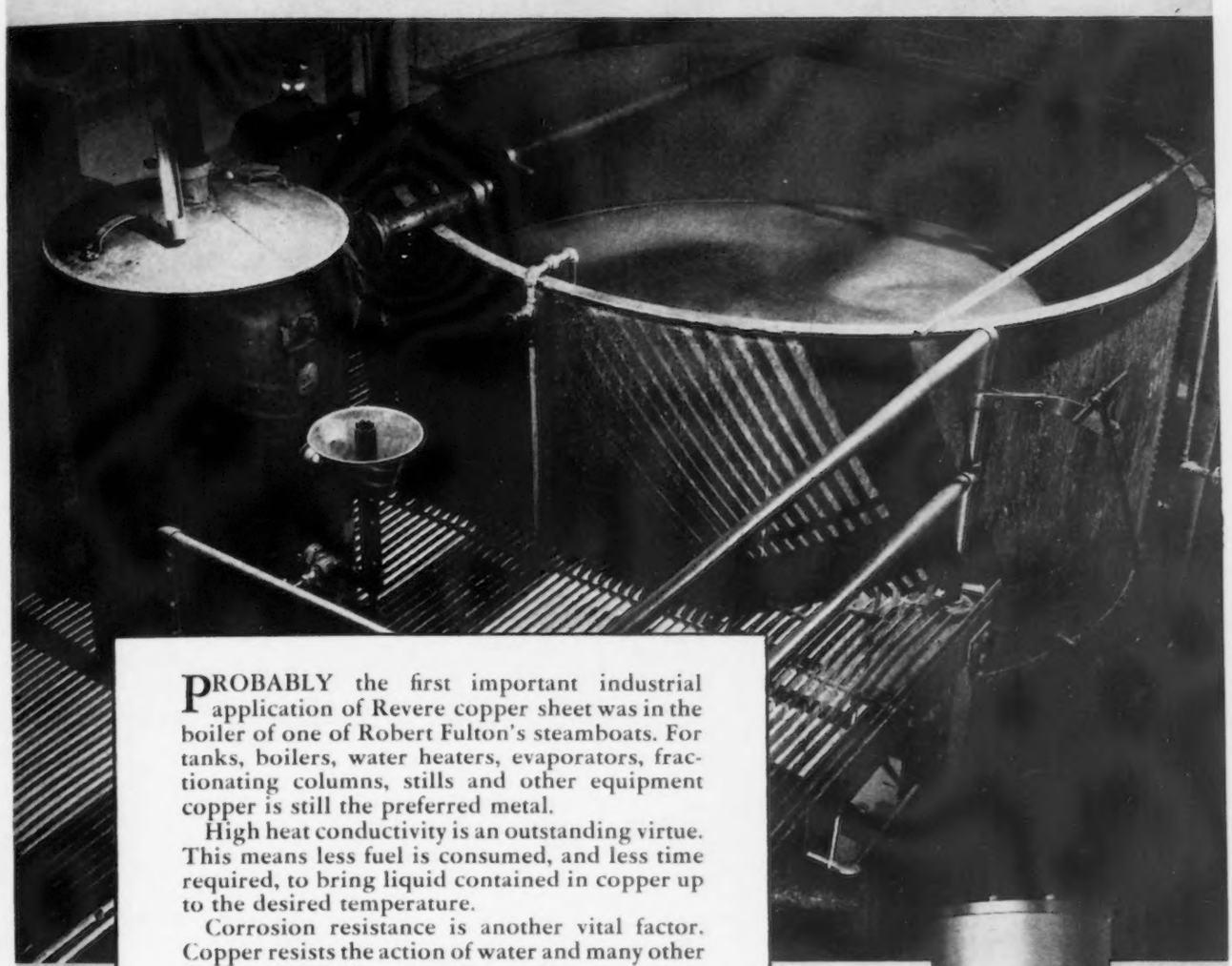


ment includes multiple magnetic discharge hoppers, magnetic vibrating feeder, variable speed drive and control panel. Standard sizes range from a main conveyer belt 6 to 18 in. wide, with from two to ten cross belts.

Drum Handling Device

A CLAMPING device designed for use with Tructractor fork-lift trucks to facilitate handling of drums which must be moved singly or in the upright position has been introduced by *Clark Tructractor*, Battle Creek, Mich. The clamp is self-adjusting for diameters 21½ to 24 in. and employs a star cam permitting the operator to release the drum without dismounting. Clamping over the chime the device grips securely throughout transportation and carries up to 700 lb.

REVERE COPPER for TANKS



PROBABLY the first important industrial application of Revere copper sheet was in the boiler of one of Robert Fulton's steamboats. For tanks, boilers, water heaters, evaporators, fractionating columns, stills and other equipment copper is still the preferred metal.

High heat conductivity is an outstanding virtue. This means less fuel is consumed, and less time required, to bring liquid contained in copper up to the desired temperature.

Corrosion resistance is another vital factor. Copper resists the action of water and many other fluids indefinitely, protecting against contamination, and assuring long life for the boiler or tank.

Easy fabrication is equally important and means lower costs. Any of the usual fabrication methods may be used including welding. Revere will gladly cooperate with you on welding methods and procedures. And should it be necessary to replace a copper vessel for any reason, the metal has a high reclaim value.

Revere copper and copper alloys are produced in sheet and plate, roll and strip, rod and bar (including welding rod), tube and pipe, extruded shapes and forgings.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York

Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; New Bedford, Mass.; Rome, N. Y.—Sales Offices in Principal Cities, Distributors Everywhere.

Assembly Line . . .

WALTER G. PATTON

• Ford develops a new technique for making experimental parts . . . Great Lakes "B" blast furnace sets another record by igniting itself . . . Davis sees 5 million cars and trucks in '48.

DETROIT — Ford engineers have come up with a novel idea for making parts quickly and cheaply and which permits economical short runs of stampings for experimental purposes.

An alloy of bismuth, tin and lead, which is ordinarily too soft to stand die pressures, is formed into a die and dipped into liquid nitrogen at approximately 320° below zero.

The extreme cooling action of the liquid nitrogen increases the hardness of the die surface to about the hardness of brass. From 6 to 10 stampings can be made from a single chilling in the frigid bath. If more stampings are required the die can be rechilled.

While still a laboratory tool for experimental parts only the use of extremely low temperatures to increase the hardness of die materials constitutes a novel step in the opinion of most automotive engineers.

In the past, experimental engineers report it has been necessary to wait from 6 to 8 weeks for small dies to be made of steel and machined. Ford is now producing soft metal dies and sample parts in from 24 to 48 hr. One advantage of the new die technique is that extremely intricate dies, although small, can be made from which accurate stampings are taken. One car manufacturer has reported that the technique should be particularly advantageous in producing experimental fins for automotive transmissions.

STEEL buyers for the automotive industry were breathing a little easier this week because of the record accomplishment of Great Lakes Steel Corp. in rebuilding its blast furnace "B" in the record time of 45 days instead of 90 days normally required to do the job.

The furnace has a daily capacity of 1250 tons and the estimated gain in pig iron production has been set at about 45,000 tons. If converted into steel, 48,800 automobiles could be made using the output saved from this blast furnace only.

Hanna blast furnace "B" has achieved a reputation for breaking records. The furnace was built in 1941 in the record time of 6 months. It was blown in on Dec. 9, 1941, 2 days after Pearl Harbor. During May 1943 the furnace produced a total of 49,704 tons which was at that time a new record for a furnace with 27 ft 3 in. hearth diam and 105 ft high.

During its first 5 years and 8 months of operation the furnace produced 2,406,400 tons of iron. It was blown out for relining on July 23, 1947.

The saving in down-time was accomplished by a combination of careful planning by Great Lakes engineers and remarkable cooperation by workmen. An unusual cleaning method by which iron was drained and washed out of the furnace rather than removed by dynamite blast was utilized. Unusually large crews of workmen—as many as 200 men—were put to work on the job. Special ventilating equipment was installed for the benefit of the workers. CIO and AFL workers labored side by side in perfect harmony, according to Great Lakes officials.

In accomplishing the record rebuild, carbon block crews laid 550,000 lb in 32 hr, a job which normally requires 4 days. Bricklayers laid 650,000 9-in. bricks in 11 days, compared with 18 days normally required. Bricklayers worked two 10-hr shifts per day, with an average of 14 bricklayers employed on each shift assisted by 34 laborers, 6 carpenters and 3 hoist engineers.

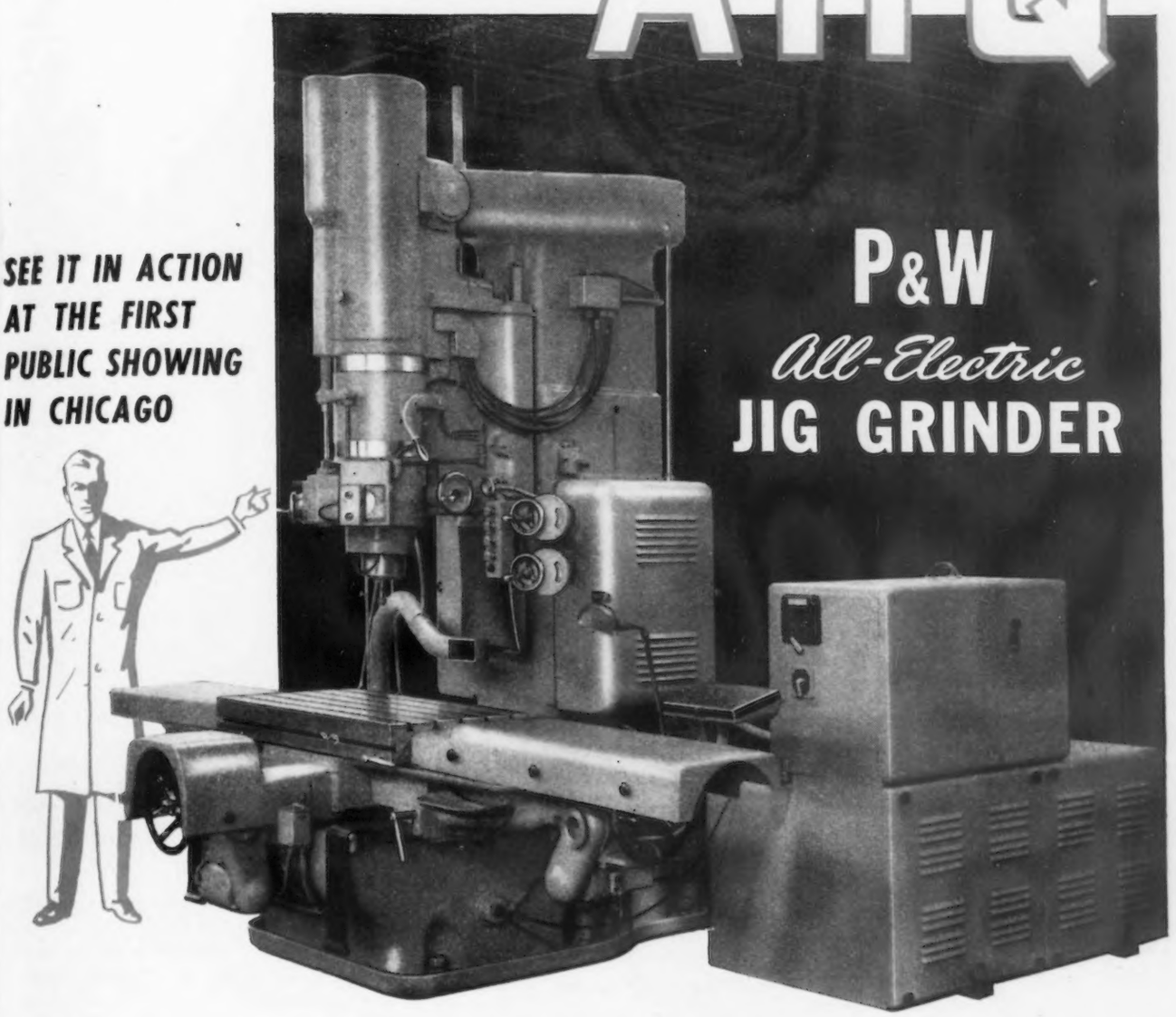
During the shutdown miscellaneous work on furnace auxiliaries including replacement of gas mains, furnace bleeders, repairs to gas washer, stock house repairs, etc., were also accomplished.

Continuing its record breaking accomplishments, Great Lakes "B" blast furnace proceeded to ignite itself nearly 12 hr prior to the scheduled lighting ceremony. Without previous experience with carbon bottom linings, the drying out process was planned in the usual manner, using air heated to 750°F. Charcoal and small kindling was placed in the furnace in preparation for the lighting ceremony. Apparently the residual heat from the carbon blocks was sufficient to ignite the charge and the blast furnace started up ahead of schedule and without official permission from anyone. Once ignited, the furnace roared out of control of the lighting ceremony planners.

Hanna blast furnace "B" was back in operation and Detroit steel buyers were happy as they counted on the possibility that the big boost in hot metal supply for Great Lakes would be reflected in increased output of automotive sheet and strip steel, so badly needed today by all car producers.

J. R. DAVIS, vice-president of Ford and director of sales and advertising, has a habit of reaching into his statistical handbag and coming up with unusual answers. Last week, speaking before Ford dealers at Biloxi, Miss., Mr. Davis offered his dealers statistical proof that (1) cars are relatively lower priced today than they were before the war, (2) even more families plan to buy cars in 1947 than planned to buy them in 1946, (3) the average U. S. postwar replacement market for cars and trucks should be higher than the prewar market, (4) we can expect a strong seller's market for passen-

Ready for you at A·H·Q ☆



There is no place more fitting than the 1947 Machine Tool Show to introduce the P&W Jig Grinder . . . worthy companion to the famous P&W Jig Borer.

Pratt & Whitney first conceived the principle of jig grinding and designed a machine in 1928 . . . quoting customers a year later. But depression conditions, followed by war, caused production to be withheld.

Today, fully developed and *all electric*, it is the perfect combination of jig-borer precision locating and fast precision hole grinding. It will be tops in significance among the new machines unveiled at Chicago.

A. H. Q.—Accuracy Headquarters at the show will be the big 6000 square foot P&W Booth No. 55 in the Northeast Corner. You'll want to see all of the many fine P&W precision machine tools, small tools and gaging equipment. Come often. Stay a long time. Discuss your problems with the men who engineer accuracy into P&W equipment.

PRATT & WHITNEY
Division Niles-Bement-Pond Company
WEST HARTFORD 1, CONNECTICUT

ger cars for another 2 and possibly 3 years.

Mr. Davis estimates 1947 car and truck production at 4,100,000. The 1948 output should be 5 million, an increase of 15 to 25 pct over the 1947 figure, he said.

In computing prices, Mr. Davis called attention to the fact that our economy is today operating on a much higher plateau of prices and income than in 1941. Therefore, he argued, the level of car prices should be related to current consumer incomes rather than to a simple comparison of car prices in 1941 to car prices in 1947.

In 1941, Mr. Davis said, the average new car sold in Detroit for $1045; today this car sells for $1675—an increase of 60 pct. During the same period, salaries and wages have advanced rapidly, he said, so that "the average disposable income per family" is 67 pct above 1941. Therefore, Mr. Davis told the dealers, cars are cheaper today than in 1941, when prices are considered in terms of the ability of consumers to buy automobiles out of income.

Apparently, if prospective new car buyers can find that "disposable family income" Mr. Davis talks about, the problem of digging up the price of a new car is comparatively simple.

THE Ford sales executive had some good answers for those who would like to know why Ford doesn't build a Tudor and sell it for $600 as it did in 1929. For example, the wheelbase of the 1929 Model A Tudor was 103.5 in. compared with 114 in. for the present Tudor. Overall length was 152 in. in 1929 compared with 198 in. today. Model A had 60 hp; the present 6 cylinder model has 90 hp. The earlier Model A weighed 2441 lb against 3216 lb for today's model. Appointments are more plentiful and luxurious. Thus, he argued, the spiraling of labor and material costs does not nearly account for the increased cost of today's motor cars. A good part of the increased cost has gone into greater size, performance, appearance and a lot of other things customers "would be very loath to sacrifice, even for a substantial reduction in price."

Ford market studies show that whereas only a third or about 9 million of the 27 million prewar car owners were regular new car buyers, at the present time there are about 13 million purchasers who may be considered as "regular new car buyers." Mr. Davis argues that the 10 pct increase in the number of families over 1941 coupled with a nearly 70 pct increase in family incomes after taxes justifies a prediction of 13 million new car buyers instead of 9 million. Moreover, he said, on this basis, the average time span between new car purchases could increase from 2½ to 3 years and there would still be a replacement market for more than 4 million cars in a year comparable to 1941 in new car purchasing.

Mr. Davis also believes the postwar replacement market for trucks will be higher and will aggregate about 750,000 or about 100,000 more than 1941.

Pointing out that public hostility and suspicion of the automobile industry is steadily building up in the face of certain trade practices in the retail field, Mr. Davis warned the assembled dealers they had better prepare now for the return of a buyer's market. That car dealers will never have a better chance to do this than right now was implied from the statement that from a dealer profit standpoint, the production of 4 million cars in 1947 is equivalent to a 1941 vehicle production of 16 million vehicles.

o o o

BACK TO WORK: *Shutdowns of automobile plants caused vacancies in production lines that looked like this. This shows the first car built at Studebaker since Aug. 5 after suspension of operations due to a strike at the Murray Corp. plant, Detroit. Murray supplies sheet metal parts to the company. Studebaker estimates the plant shutdown cost dealers 6000 passenger cars and employees lost $1,500,000 in wages.*

o o o

Steel Now a Third Of Int'l. Detrola Sales

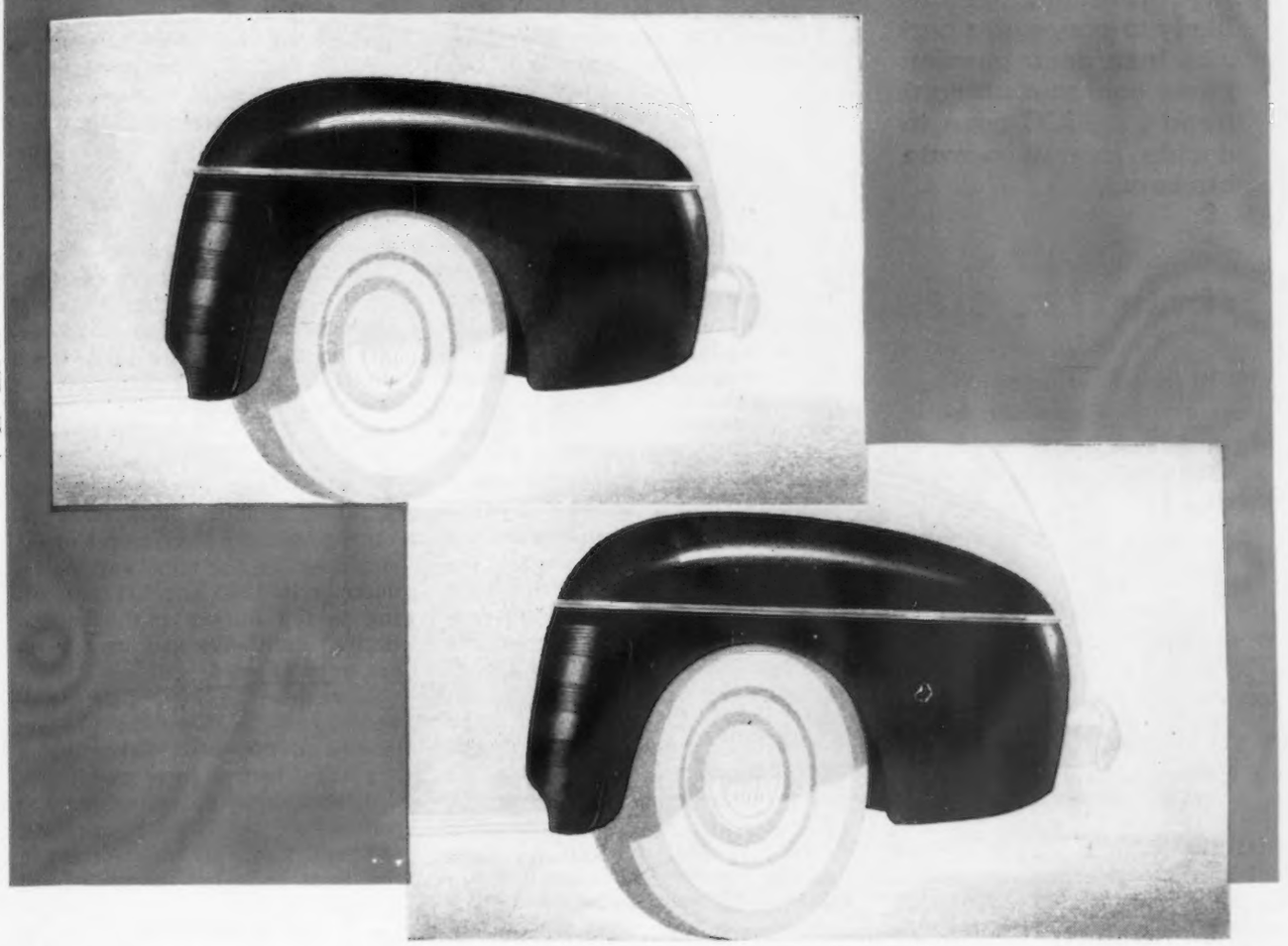
Detroit

• • • **Steel sales now** represent 32 pct of Detrola's $53,028,515 consolidated sales, according to an announcement by C. Russell Feldmann, president and board chairman of International Detrola Corp., Detroit.

Detrola's business now embraces manufacturing divisions in refrigeration and air conditioning, home and automobile radios, phonographs, special machinery, aircraft power plants and sub-assemblies in addition to its steel facilities consisting of open hearth furnaces, rolling mill and steel fabricating operations and a blast furnace.

Sales for the nine months ended July 31, 1947 were more than double the 1946 figure of $25,790,436. The increase in sales reflects the addition of steel and coal operations as well as the acquisition of Universal Cooler Co., of Canada, formerly a partly owned subsidiary, according to Feldmann. However, most of the gain is in steel making, the report said.

Sure, they LOOK ALIKE from where you sit



. . . but what a difference under the paint!

One of those gleaming new fenders is regular low-carbon steel; the other is N-A-X HIGH-TENSILE.

Because of the high yield strength of N-A-X HIGH-TENSILE, fenders and similar parts made of this steel will be considerably more resistant to denting. This characteristic, combined with other desirable properties of N-A-X HIGH-TENSILE, assures longer life with less maintenance cost.

N-A-X HIGH-TENSILE's finer grain structure and higher hardness make possible a better finish without costly surface preparation.

N-A-X HIGH-TENSILE's higher corrosion (rust) resistance means that the fender will keep its new-car look and style much longer.

From any angle you look at it — manufacturer's, fabricator's, owner's—the N-A-X HIGH-TENSILE fender is far and away the better buy!

MAKE A TON OF SHEET STEEL GO FARTHER
Specify—
N-A-X
HIGH-TENSILE STEEL

GREAT LAKES STEEL CORPORATION
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Washington . . . .

EUGENE J. HARDY

• Marshall Plan places most procurement in Bureau of Federal Supply . . . Foreign missions likely to play large part . . . Insurance pension plans continue upward trend . . . ICC case to decide fate of private truckers.

WASHINGTON — Congressional approval of the Marshall plan for the rehabilitation of Western Europe, assuming that the European nations work out an acceptable program, is still in the doubtful stage despite widespread adherence to the so-called bipartisan foreign policy. Nevertheless, officials of the Bureau of Federal Supply, formerly the Treasury Procurement Div., are anticipating a return to large-scale procurement reminiscent of the days when they were buying all supplies from lend-lease, except engines of war and food, and particularly all supplies for UNRRA.

While the whole plan is still in a very fluid state, industry has expressed considerable interest in the procurement possibilities of this proposed multibillion dollar aid program. Because of this fluidity, nothing definite can be said in regard to procurement at this time. However, State Dept. officials point out that the Bureau of Federal Supply with its past experience in large-scale purchasing would be the logical agency to carry the bulk of the load.

Lending credence to such reports, is the fact that Federal Supply has already embarked on a buying program to carry out the aims of the Truman aid plan for Greece and Turkey. This buying will be done under State Dept. directives using the formal sealed bid method common to government purchasing. This would also be the case in regard to the Marshall plan.

While Federal Supply has been forced to release considerable personnel as a result of recent appropriations cuts, it will not be necessary for the agency to request additional funds to carry out the Greek-Turk program or even the broader Marshall plan if it should be adopted. Reason for this is that appropriations for aid programs are designed to include funds for all administrative work needed to complete the procurement, beyond the money required for actual purchases. For example, if the State Dept. ordered the purchase of railroad equipment for Greece in the amount of $100,000, Federal Supply would, after careful checking, request an additional amount to take care of necessary paper work and other details.

IN addition to Federal Supply's procurement for Greece and Turkey, American contracting firms are receiving direct contracts for construction of roads, harbors, docks, etc., and Greek and Turkish merchants are buying some supplies direct.

In cases where priority aid is necessary it will be granted by the Office of Materials Distribution, Dept. of Commerce, which has been granted such priority powers until Mar. 1, 1948.

As to the Marshall plan, if and when adopted, procurement will probably follow much the same pattern; however, foreign purchasing missions might figure largely in this picture. But, here again, Federal Supply would have a hand in the deal, since many of the foreign missions leaned heavily on this agency during the war. Surprisingly enough there are still quite a number of foreign missions still operating in this country, despite a State Dept. order of last year suggesting their dissolution. Included in the group are the following countries: Belgium, Denmark, France, Greece, Italy, the Netherlands, Great Britain, Norway, Sweden, and Turkey—all of which would be eligible for aid under the Marshall plan as presently outlined. Other European countries still operating purchasing missions in this country, but which have thus far refrained from participating in the talks on the Marshall plan are: Czechoslovakia, Finland, Russia, and Yugoslovia. Should the Marshall plan become a reality, all of these missions could be quickly expanded and the State Dept. would probably agree to a resumption of large-scale procurement by these groups.

* * *

EMPLOYER-financed insurance and pension plans were advanced by more than 40 pct of the employers in the metalworking industries in 1945 and 1946, according to the Bureau of Labor Statistics. Both office and plant workers were affected.

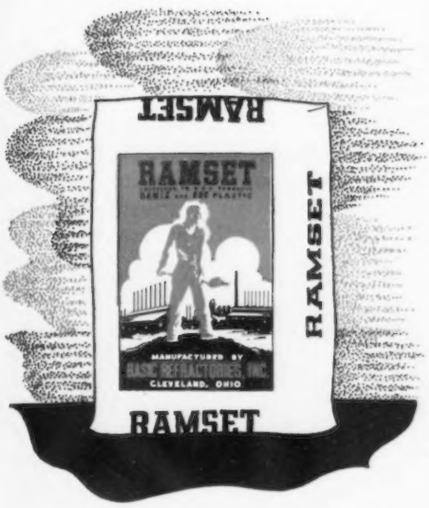
More than one third of the metalworking plants studied by BLS are located in the Great Lakes region and about half of these plants have instituted some type of insurance or pension system. Midwestern plants, although relatively unimportant in the total industry group, offered more such plans than did the Great Lakes area plants. Only 37 pct of Middle Atlantic states plants adopted such plans.

According to BLS, 44 pct of all metalworking establishments had insurance or pension plans. The remaining 56 pct had none. Of those having such plans, 36 pct had life insurance plans, 26 pct had health insurance plans, 4 pct had retirement pension plans and 9 pct had other plans. Low percentage of retirement plans is due, of course, to the government's social security program.

Factors affecting adoption of such plans varied greatly from region to region, according to the BLS study. These factors include: (1) Concentration in various industries, (2) some low-wage industries have adopted such plans on a larger scale than high-wage manufacturing industries, (3) collective bargaining since the beginning of World War II a substantial number of contracts contain specific provisions re-

IT TAKES A STEEL YARDSTICK

to measure a Basic refractory



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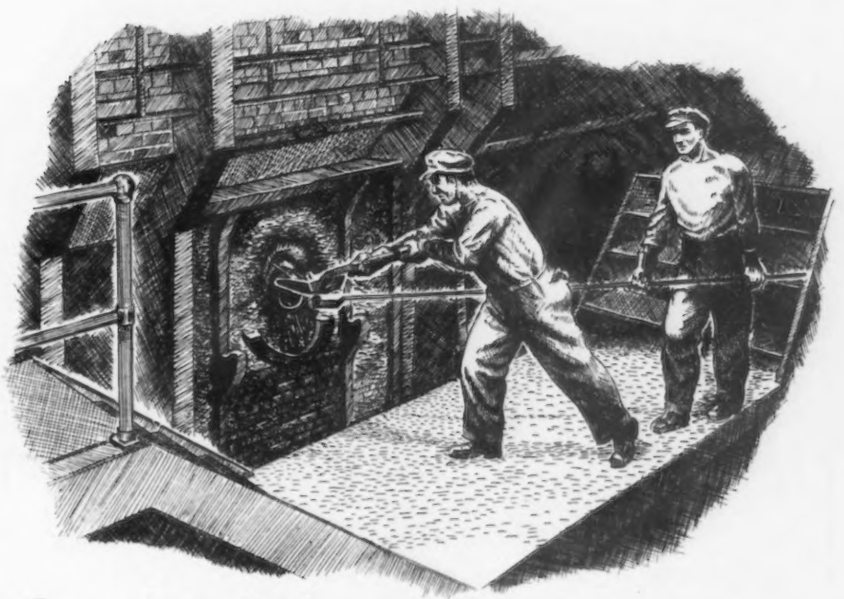

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lating to such benefits, (4) size of establishment and location in terms of size of community, (5) fact that employer participation represents a labor cost.

* * *

A FORTHCOMING decision of the Interstate Commerce Commission should decide once and for all the feud between firms operating trucks to transport their own supplies and raw materials and the for-hire carriers. The big question to be decided is: "What is a private carrier?"

For-hire interests are hopeful that the ICC will set aside the principles established in an earlier case that set forth the "primary business" test. ICC ruled in this case that any business may receive compensation for transportation as a private carrier if the transportation is only incidental to the primary business of the firm involved. These interests have asked the ICC to apply a test whereby any firm that receives compensation for transportation, in any form whatsoever, would be under the jurisdiction of the ICC and subject to all for-hire regulations.

If the ICC should rule in favor of the for-hire interests, it would result in driving thousands of trucks belonging to independent manufacturers off the road, since it would be almost impossible for private carriers to live up to ICC rules and still transport their goods efficiently.

The private carriers contend that the "primary business" test, upheld by an ICC examiner in the case at issue involving the Lenoir Chair Co., should be the sole determining factor in fixing their status.

The ICC examiner found Lenoir a private carrier after making the following determinations: (1) The company had unsuccessfully attempted to dispose of its transportation business; (2) only about 15 to 20 pct of the annual output was transported in company vehicles; (3) company equipment was used only when the customer was pressing for delivery; (4) the company had never held itself out as a common or contract carrier.

The National Industrial Traffic League opposes the position taken by the National Tank Truck Carriers, Inc., and the Regular Common Carrier Conference of the American Trucking Assn. It urges that there be no "for compensation" test for application to bring under regulation concerns using trucks privately in furtherance of an enterprise.

* * *

TESTS of gas economizers at the National Bureau of Standards have revealed that these devices, allegedly designed to reduce the fuel consumption of the average automotive engine, have no basic value, according to Bureau engineers.

The Bureau states that the postwar "economizers" tested do not differ radically from prewar models, although their names tend to keep up with the latest in engineering and are often designated as electronic or supercharge devices.

Bureau engineers say that some of these devices "may actually effect a small amount of fuel saving by adding additional air to the gas-air mixture prepared in the carburetor, but this job is done more effectively by carburetor adjustment. Most others tested showed no measurable effect whatsoever on either gas consumption or engine performance."

Of the devices that produce no measurable effect, says the Bureau, a recent example was an "electronic gas saver" which, by utilizing an electric spark, was said to produce ozone that would boost power. Bureau engineers report that "the amount of ozone produced was so small that it could not be measured which was a negative virtue as ozone in quantity has been found to be a powerful knock inducer. The claim for another type of economizer, which fitted on the end of the exhaust pipe, was that, by reducing back pressure in the exhaust line, it would cause a more complete elimination of the burned fuel in the cylinder and increase the efficiency of succeeding charges from the carburetor. In testing this device in the laboratory, a pressure drop was built up at the end of the exhaust line that was more than 30 times that which would be met anywhere outside the laboratory before a noticeable change in gas use occurred."

In their engine tests, Bureau technicians found that the mixture that gives maximum engine power contains about 12 lb of air to 1 lb of fuel, while the most economical mixture is around 17 lb of air to 1 lb of fuel.

THE BULL OF THE WOODS — BY J. R. WILLIAMS

BOYS, WE HAVE A NEW POLICY HERE -- WE PRESENT EACH NEW BOY WITH A BEAUTIFUL BUTCHER KNIFE AND A HUNTING KNIFE!
EVERY APPRENTICE KID MAKES KNIVES OUT OF FILES ON TH' COMPANY'S TIME -- TH' BULL OF TH' WOODS IS KIDDIN' HIMSELF IF HE THINKS THIS'LL STOP IT!
J.R.WILLIAMS
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West Coast . . .

ROBERT T. REINHARDT

• California State Fair fails to reflect industrial progress . . . All-wing planes claimed superior . . . Seattle labor situation quiets down under T-H act influence.

SACRAMENTO — California is undoubtedly becoming industrialized, but there is still a heavy proportion of hayseed and fruit blossoms mixed in the "smog" arising from its furnaces and factories.

An estimated 800,000 persons poured through the turnstiles of California's State Fair to marvel at superb stock, lush fruit and vegetables and to admire and buy farm machinery.

This was the first state fair held here in 6 years and as fairs go it was probably an outstanding success. Crowds were never larger, agricultural exhibits were never so numerous and the pari-mutuel machines never worked so fast.

Historically, fairs are for farmers and consequently emphasis is properly placed on elements close to the soil. However, farmers are people and people make markets and influence industrial economy and it would seem reasonable that western manufacturers would be eager to take such an opportunity as the state fair to parade their achievements.

Apparently California industrialists think otherwise. With the exception of farm machinery manufacturers—both eastern and western—who did an outstanding display and sales job, there was but little evidence of California's industrial progress.

Notably absent among exhibitors were Columbia Steel Co. and Bethlehem Pacific Coast Steel Corp. which heretofore had always used large spaces to display their products. Other steel producers of the West likewise failed to show.

Sacramento is doing its part to relieve the scrap shortage for western furnaces at any rate. Approximately 2000 tons of street car rails were recently auctioned off and brought $27.56 per ton from Joseph Levin & Sons of San Francisco. This price is believed to be a record in this area and will return a profit to the city. Low bid was $10 per ton. Last October the city of San Francisco sold similar rails for $16.14 per ton.

It is reported that the city of Los Angeles is continuing to pave over abandoned rails rather than to take a chance of loss on salvage operations. With the encouragement of this last sale Sacramento plans to continue taking up the needed scrap.

LOS ANGELES — "A major change from conventional designs of long-range aircraft is dictated by the success achieved to date with all-wing types," John K. Northrop, president, Northrop Aircraft, Inc., said here in commenting on the significance of all-wing airplanes.

Mr. Northrop cited detailed performance comparisons between all-wing and conventional types, showing where the former has advantages over the latter, not only from the aerodynamic standpoint, but also from the standpoint of simplicity of construction and weight reduction.

"All-wing airplanes are not expected to be suitable to replace conventional designs for all purposes," Mr. Northrop explained, "but for comparatively large, long-range bombardment and transport types they offer outstanding advantages. Speeds up to 25 pct greater than conventional aircraft having the same power and weight, and ranges more than 50 pct greater than conventional types at the same or higher speeds have been demonstrated to be attainable in the near future."

A complete resume of designs successfully flown to date by the Northrop company range from a 29-ft "buzz bomb" to the 172-ft XB-35 Flying Wing, two of which are currently undergoing test for the Army Air Forces. An examination of stability and control problems was made with an estimate of further performance improvements to be expected in the near future.

* * *

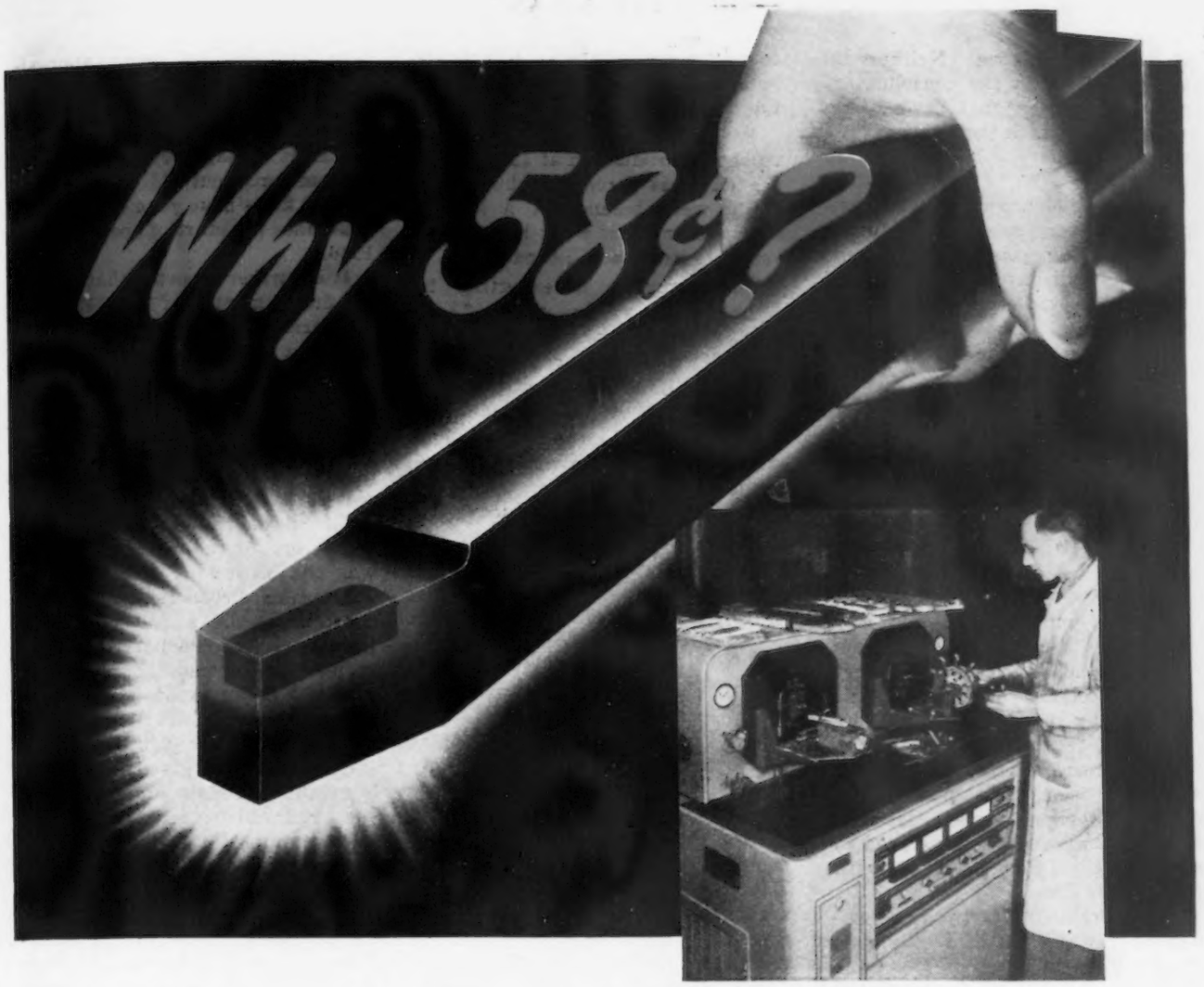
Over 85 pct of Consolidated Steel Corp. stockholders voted in favor of the sale of Consolidated to Columbia Steel Co., providing government approval is obtained. The antitrust suit brought against the sale by the Dept. of Justice is holding up consummation of the sale.

SAN DIEGO—Consolidated Vultee Aircraft Corp. resumed its graveyard shift and announced that more than 8000 are now on the payroll. This about doubles the postwar low in employment.

The company reports orders for 177 two-engine Convair-liners from domestic and foreign airlines. Production is being speeded up to handle this backlog.

SEATTLE — Tranquillity pervades the labor situation in this area with the settlement of the Boeing dispute and Kirsten Pipe Co.'s strike which has run since May 16.

Just getting under the deadline of Aug. 22 when the Taft-Hartley Act became fully effective, the Aeronautical Mechanics Union signed an agreement with the Boeing Aircraft Co., which duplicates last year's contract and failed to give union members the 5¢ an hr increase plus 8 paid holidays (totaling the equivalent of another 5¢ an hr) which the company had offered in its initial proposal. In brief, the new contract affords no wage increases for any employees. However, the company did not receive the benefits of a proposed change in the seniority program calling for lateral transfer which



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1. ***Large lathe tools:*** **8 times as fast.** ***TOCCO brazes 85 per hour; former method 80 per day.***
2. **Cost cut from 58¢ to 4¢** ***for each large tool.***
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it had been seeking. Neither did the union obtain the consolidation of labor grades that it had requested and which the company was reported as having been willing to grant.

Neither the union nor the company says very much about future plans, but of course any future contracts will have to be made under the provisions of the Taft-Hartley labor bill.

The strike at the Kirsten Pipe Co. ended when an agreement was signed in time to get under the Aug. 22 deadline and the plant resumed production of its aluminum alloy smoking pipes within a week. However, full production was not achieved because of the long shutdown which necessitated some equipment adjustment and conditioning.

Kirsten employees are now covered under a city wide agreement of the metal fabrication industry that was signed on May 15 and will thereby receive some wage increases. A stipulation by the company, which brought about the strike, for the establishment of production workers wage schedules for new employees was included in a supplemental contract signed with the Kirsten firm.

Considerable interest is being evidenced in the battle the Pacific Traffic Bureau is waging to lower freight rates. While it is anticipated the case as presented by the Bureau will not be heard for at least 6 months and may extend over 2 years, a unified front is being drawn up to secure a 10 pct reduction in freight rates which will give local industry a better break with eastern manufacturers. Efforts are being made to solicit support in California and Oregon.

Pacific Car & Foundry which had reached a production of 12 rail cars per day was forced to shut down for a week because of a lumber shortage and last week had not as yet gone back to full capacity.

This company is expecting to launch a new version of the "Kirsten" propeller which they have developed from the original model produced by Professor Kirsten of the University of Washington.

It is believed by the company engineers that improvements and simplification of the original Kirsten rotary propeller which performed spectacularly last year on Puget Sound will result in economies in production without decreasing its effectiveness. If all goes well the new version of the propeller will make its debut on the 60-ft work boat hull now being built by Everett Pacific.

Plans are being laid for marketing the new propeller on completion of its trial runs and elimination of any "bugs" which develop then.

Also in the process of development at Pacific Car & Foundry is a 7-speed transmission for trucks with three already built and with one being used now on a heavy truck built by the Kenworth Motor Truck Corp. here. The second is expected to be installed on the truck operated by a freight line for experimental purposes.

PORTLAND — Mortality among the 159 industries started during the year 1946 in this area has been revealed as being approximately 7 pct.

According to figures released by Chester K. Sterrett, industry department manager of the Chamber of Commerce, only 11 of the newly started firms have gone out of business since the start of operations in 1946.

It is further reported that during the first 8 months of 1947, 135 new industries have been introduced in this area and that they now employ approximately 1000 persons. Twelve new companies began operations here during the month of August and seven already in operation announced plans for additions to their plants.

The largest single industrial development for the month of August was the letting of a contract by Fibreboard Products, Inc. for the construction of a $400,000 plant. Industrial Air Products Co. is expected to spend approximately $100,000 in an expansion program and the Mixermobile Mfg. Co. has completed its new plant.

Credit is being given to the newly established Raw Materials Survey organization for bringing the Carborundum Co. to this city.

This company is expected to make an investment of at least $2 million and to employ 1500 persons for the production of its carborundum products and the manufacture of aluminum oxide abrasives, grinding wheels, sharpening stones, coated abrasive products and refractory products.

The company recently paid $51,000 for 92 acres of Columbia River waterfront property. Silica will be brought in from the Rogue River and Spokane areas and the carbon is expected to be shipped in from Oregon and California points.

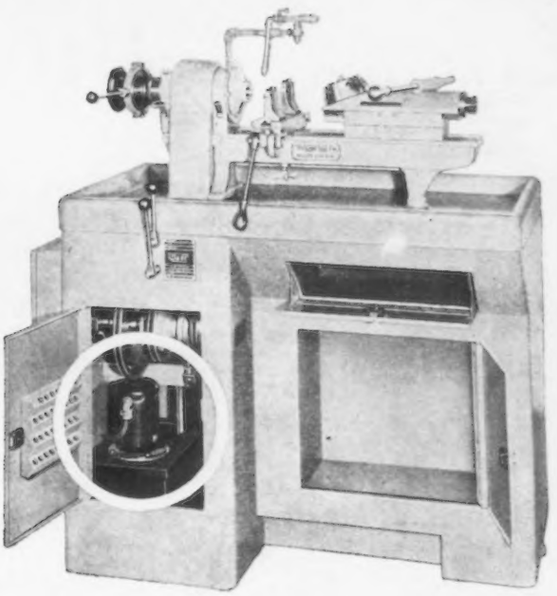
Power for the operations is expected to be delivered from the Bonneville Power Administration which has committed itself to supply 18,000 kw which is believed to be far below ultimate requirements.

Local manufacturers are devoting considerable attention to the preparation of written testimony to be presented before the ICC in an effort to preserve the recently and temporarily authorized freight rates on steel from Geneva to this area.

The Attorney General of the state of Washington has also filed a petition for the reduction of class rates in the Mountain-Pacific territory and industrialists are considering whether local support should be given to the Washington petitions.

NEW MINES BUREAU CHIEF: *Dr. James Boyd, former dean of the Colorado School of Mines, takes the oath as Director of the Bureau of Mines as Secretary of the Interior Krug looks on. Acting Chief Clerk Clarence C. Davison of the Interior Dept. is administering the oath. Behind him is Undersecretary of the Interior Oscar L. Chapman.*

RUTHMAN GUSHER COOLANT PUMPS



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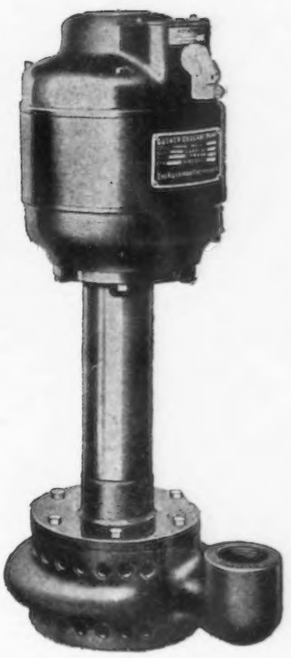

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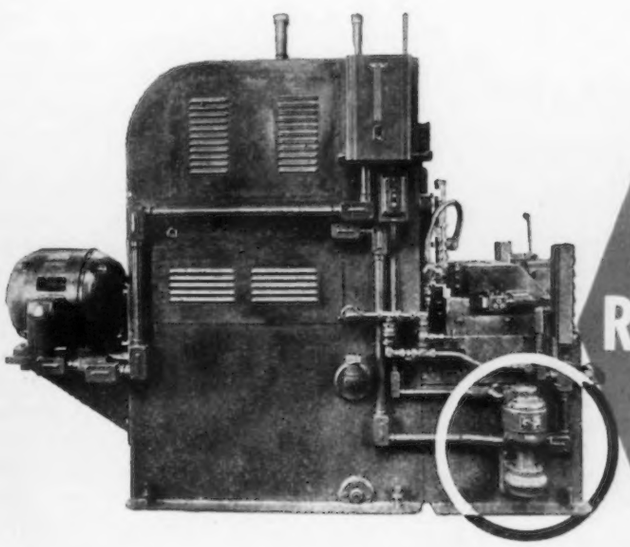
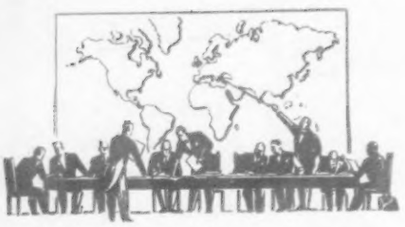


THE RUTHMAN MACHINERY COMPANY

European Letter . . .

• Public once again led to expect more than was imposed on them . . . Tinker's curse falls upon middle classes . . . Urgent need for a new policy.



LONDON — Another mouse of restrictions has been brought forth from the Labor mountain. Once again, the public has been led to expect very much more than was imposed on them by the recent announcement. Once again, the inevitable public reaction will be to conclude that the crisis cannot, after all, be as bad as the government says it is.

For the great mass of the people, the only impact of the economic crisis is to be the loss of twopennyworth of meat a week, and elaborate care is taken to see that there is no reduction in the supplies available to the canteens and restaurants where they eat. The rest of the restrictions are chosen to fall almost exclusively on those who are not wage-earners. So far as the workers are concerned, the government is still tinkering with the crisis; it is the middle classes who get the tinker's curse.

This simply will not do. A revolution in the country's economic position happened last week. Until Wednesday, Aug. 20, the British people were living on Lend-Lease and policy was governed by the hope, which was still officially entertained, that it would be possible gradually to restore the prewar pattern of trade among nations.

Last week, all that changed. For one thing, the dollars have now run out. What Mr. Morrison called the twelfth hour has struck, and it would be the height of foolish optimism to base any calculations on the assumption that more dollars will be forthcoming either through the Marshall Plan or in any other way. For these new circumstances, a new policy is clearly required. Yet the government announcement is at some pains to argue that these new cuts are merely a further installment of the policy decided upon before the fateful day of Aug. 20.

MOREOVER, something else of the greatest importance happened on that day. The two crippling conditions attached to the American Loan vanished—the obligation to make sterling convertible was explicitly suspended and the nondiscrimination provision, for all Mr. Snyder's protestations of the sanctity of Article Nine, was tacitly abandoned. Not only is there the most urgent need for a new policy, but there is a new freedom to devise it in the way best calculated to serve Britain's needs and interests.

But of a new policy there is not the faintest vestige of a shadow of a sign. All that the government can think of is the old policy, and not very much of that. Since they came into office 2 years ago, Ministers have contributed only one new idea to economic policy and that one, the nationalization of basic industries, is of precisely no relevance at all to the present crisis.

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For the rest, all they can think of to do is to turn a bit further the screws of the old war-economy policy of the coalition. All the old expedients are being trotted out again, with the rations somewhat smaller and the targets somewhat higher. Even their boldest step, the policy for the expansion of agriculture, carries with it not a single new idea about how it is to be done. The present course of economic policy having been demonstrated to be inadequate for the nation's needs, their only recourse is to intensify it.

NATURALLY, the old screws are getting harder to tighten any further. Naturally, some of them will break under the government's hand. And naturally a policy so conceived will fail to achieve what is required of it.

The first test of a sound policy for today is very simple. Does it reproduce in every family budget and in every business profit-and-loss account a microcosm of the nation's desperate straits, so that individual efforts and initiatives will pull in the same direction as the government's policy? So far from trying to do that, the government seems to be desperately anxious to insulate the great mass of the people—who, after all, have nearly three quarters of the total of net personal incomes—from feeling any impact of the crisis.

The feather bed is still their economic symbol. And as a result, for all their protestations to the contrary, the country will be lucky, if it does not find itself living on the last vestiges of its stock-in-trade, and if the destocking crisis which occurred in coal last February is not repeated before very long throughout the length and breadth of the economy.

IT is difficult to feel very optimistic about the prospect of a really new course of policy emerging either to recapture the control of the domestic economy that has been lost or to take such advantage as can be gained from the new state of affairs in international trade.

For one thing the senior civil servants, who are the real initiators of policy, are all very tired and overpressed men who simply could not face the mental and physical effort of starting again from first principles. And it is by now clear that the Socialist Ministers never had but one idea. They have been so obsessed with getting hold of the controls of the national economy, with seizing power, that they have never stopped to think what they are going to do with it.

In the one industry that is already nationalized, coal, there is an obvious policy to pursue; but there

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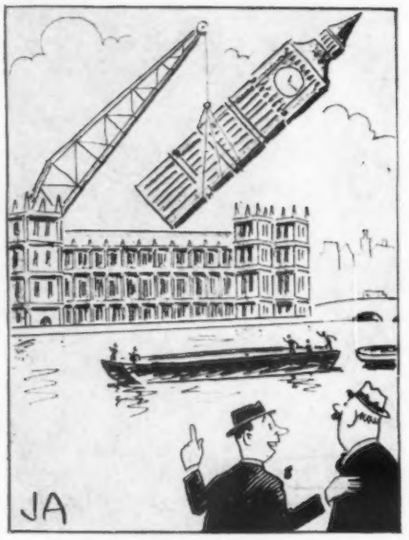
Division Sales Offices: Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco

The term "National" is a trade-mark of National Carbon Company, Inc.

are no signs of its being pursued, and meanwhile the coal industry goes on much as it did before. In the other industries that are about to be nationalized, the appointments made demonstrate a determination that very little, if anything, shall be changed. So far the Labor Party has made a negative contribution to economic policy. Nationalization adds nothing, and the elaborate deference to trade union selfishness and recalcitrance subtracts a great deal.

THERE is no case, at least in the crisis of the moment, for a return to the methods of individualist *laisser faire*. What the nation urgently needs, and would respond to, is some real economic planning, some purposive direction of its affairs instead of the present hortatory, sloganized drifting.

Planning has no terrors for the British people, provided it achieves results. Socialism would be accepted by an overwhelmingly majority of the people if it could only be given some meaning. What is infuriating is the government's propensity for nationalizing first and then looking round for a policy, of taking sweeping powers without the will to use them, of controlling for the sake of controlling and not for the sake of doing anything.

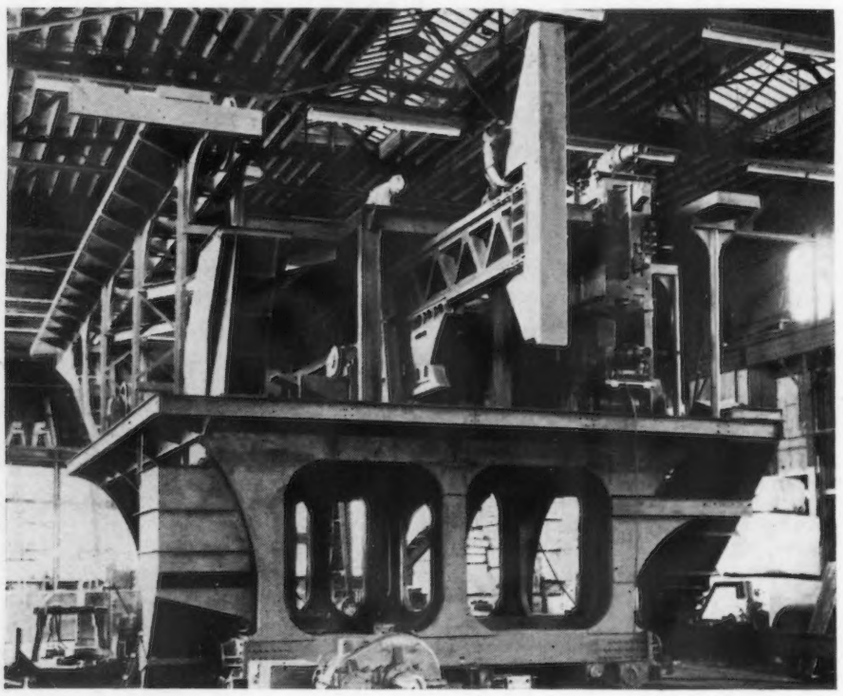


ANYTHING GOES: *"Now that's what I call a good idea. It's all going for export," reads the caption of this British cartoon by J. Arthur.*

If they would reverse the process, if they would first realistically face the facts about the country's position, then work out the possibilities of altering the facts, then set targets that can be achieved and are consistent with each other, and only as a last stage evolve the controls and take the powers that are necessary to achieve the targets—if they would do that, then they would not need to worry about frightening the people by being too drastic or too extreme.

Nothing that would emerge from such a process would be half as frightening as the present demonstration that, having failed in one line, they have nothing to put in its place, and that, with a hurricane blowing up, the committee on the bridge cannot agree either to alter course or to take in sail or even to batten down the hatches.

COKE PUSHER: *This 150-ton coke pusher is nearing completion at Koppers' shops division Baltimore plant. One man can operate the machine which will push 15-ton coke charges from steel mill ovens. A dozen motors, ranging from 65 to 2¼ hp, run it.*



Rise in Foreign Rail Rates May Eliminate Marginal Consumers

Washington

• • • **Increases in** foreign rail rates may soon force U. S. businessmen to drop some marginal consumers, the Commerce Dept's Office of International Trade has predicted.

OIT reports that rail rates recently have been raised in Britain, France, Finland, Spain, Turkey, Cuba, Colombia, Mexico, Costa Rica, Brazil, Peru, Chile, Bolivia, China, French Indo-China and Japan. Indications are that rates in Canada and Argentina will soon be increased.

"Traders should be aware of these rising freight rates in calculating costs of merchandise distributed abroad or originating in other countries for U. S. imports," OIT points out. In areas where an exporter's product involves a longer rail haul than that of a competitor, it may mean virtual loss of a large part of his market.

"Even where a U. S. trader is competing with other foreign traders and suffers no disadvantage in length of haul, increased freight charges may raise prices to a point where marginal consumers would be eliminated from the market. For the importer, the increased rates may mean a substantial disadvantage in those markets where he competes with domestic producers," OIT economists state.

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SPECIALTY

NITRALLOY

CARBON TOOL

STAINLESS

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NONE FINER

ARISTOLOY STEELS

COPPERWELD STEEL COMPANY

WARREN, OHIO

PERSONALS

FRANK CUCCIA, director of procurement, Glenn L. Martin Co.

• **Frank Cuccia** has been appointed director of procurement of the Glenn L. Martin Co., Baltimore. Mr. Cuccia has been assistant director of procurement since last year.

• **Fred H. Lucas** and **Max H. Hofmann** have been appointed assistant managers of sales, structural and plate division of Carnegie-Illinois Steel Corp., Pittsburgh, U. S. Steel Corp., subsidiary. Mr. Lucas was first employed by American Bridge Co. as a field inspector. In 1927 he joined Carnegie-Illinois as a promotional engineer and through successive advancements attained the position of manager of sales, structural division, Chicago district, which he held at the time of his present appointment. Mr. Hofmann joined Carnegie-Illinois in 1943 after serving as associate chief of the plate section, steel division of the War Production Board. He was sales engineer, structural and plate division, at the time of his appointment.

• **F. E. Scheven,** vice-president of General Electric X-Ray Corp., Chicago, has been placed in charge of the employee relations division, succeeding **F. J. Walters, Jr.,** who has resigned to become manager of industrial relations at Hotpoint, Inc., subsidiary of the General Electric Co. **W. E. Ferebee** has become executive assistant to Mr. Scheven, in charge of the operations of this division.

• **Henry Coughlin,** superintendent of transportation and labor, Chicago district, Republic Steel Corp., has been appointed chairman of the corporation's transportation committee. He will succeed George Hackett, superintendent of transportation for Republic in the Youngstown district.

• **E. P. Gaffney,** formerly manager of the machinery steel sales division, has been appointed manager of the combined alloy and machinery steel sales division of the Crucible Steel Co. of America at the executive offices in New York.

• **W. Harrison Lackey** has been made district manager of sales for the Pittsburgh district sales office of Lukens Steel Co. and subsidiaries, By-Products Steel Corp. and Lukenweld, Inc., Coatesville, Pa. Mr. Lackey will make his headquarters at Pittsburgh. He succeeds **Arthur H. Brown,** who has been appointed district manager of sales for the Coatesville district sales office for Lukens and subsidiaries. Mr. Lackey, who has been sales representative for Lukens, By-Products and Lukenweld in the York, Pa., district since 1945, has been associated with Lukens Steel Co. for 9 years.

• **Harvey A. Mylander** has been appointed district manager for Southern California and Arizona for the De Laval Steam Turbine Co., Trenton, N. J. He was formerly associated with the General Electric Co. and the American Hoist & Derrick Co. Previously he spent several years as sales engineer for the International General Electric Co. in Venezuela. Headquarters for Mr. Mylander will be maintained at De Laval Steam Turbine Co., district office, in Los Angeles.

• **Alfred Marchev** has been elected president and general manager of Aircraft Screw Products Co., Inc., of Long Island City, N. Y. Mr. Marchev was formerly president and chairman of the board of Republic Aviation Corp.

EDWARD J. MALVEY, advertising manager, Chase Brass & Copper Co.

• **Edward J. Malvey** has been promoted to the position of advertising manager of the Chase Brass & Copper Co., Waterbury, Conn. Mr. Malvey became associated with Chase Brass & Copper Co. in 1924. For a number of years he has been assistant to Mr. Chase in advertising.

• **A. J. Krantz** has been made director and vice-president, secretary and treasurer of Empire Steel Corp., Mansfield, Ohio. **C. F. Beddard** has been appointed vice-president in charge of sales; **Elmer Hamaker,** assistant secretary and assistant treasurer, and **Donald Hattman,** plant auditor and office manager. **Samuel J. Reeves** has been elected to the board of directors.

• **Howard E. Carson** has been appointed manager of the business management and research department of Kaiser-Frazer Corp., Willow Run, Mich. Prior to the war, Mr. Carson was a statistician for Chrysler Corp. **T. A. Bedford** has been appointed general manager of the Detroit Engine Div. of Kaiser-Frazer Corp., Detroit.

• **Raymond L. Newman,** assistant resident manager of the Kansas City plant of the Fisher Body Div. of General Motors Corp., has been named assistant resident manager of the division's new plant at Los Angeles. **Leo. L. Rosshirt** becomes assistant manager of the Kansas City plant of Fisher.

• **Fred A. Thomson** has been appointed secretary of Ford Motor Co., Dearborn, Mich., succeeding **H. E. Schluchter,** retired. Mr. Thomson joined Ford as an accountant in 1918. He was transferred to the secretary and treasurer's office in 1926 and has served as assistant secretary since 1941.

• **Gordon A. Roberts** has been appointed manager of the future demands department of International Business Machines Corp., with headquarters in New York. He was previously a special representative in the public utility field.

• **Albert Musschoot** has been appointed assistant to the chief engineer, Link-Belt Co., Chicago. Mr. Musschoot was formerly a member of the general engineering staff of Link-Belt at Philadelphia.

• **Charles F. Steiger,** formerly chief engineer of the manufacturing division of the Kroger Grocery & Baking Co., Cincinnati, has joined the staff of Douglas M. McBean, Inc., of Rochester and New York.

• **H. M. Griffith,** until recently general superintendent, Hamilton and Ontario works of the Steel Co. of Canada, Ltd., has become works manager of these plants. Mr. Griffith joined the company as a metallurgist in 1936, subsequently occupying the position of openhearth superintendent, assistant works manager and general superintendent. **George P. McAleer,** formerly assistant general superintendent, becomes assistant works manager, Hamilton and Ontario works.

• **Charles A. Petri,** advertising manager of the Falk Corp., Milwaukee, has resigned.

• **Donald C. Scheele** has been promoted to general and sales manager of Burdett Mfg. Co., Chicago, and **Robert B. McCormick** has been named treasurer. Mr. Scheele has been an engineer with Burdett for 9 years. Mr. McCormick, the new treasurer, similarly came up through the ranks of the organization.

DAVID LYLE, assistant vice-president in charge of engineering, Continental Foundry & Machine Co.

• **David Lyle** has joined Continental Foundry & Machine Co. as assistant vice-president in charge of engineering and will be located in the Pittsburgh office. Until recently, he was engineer of roll and mill department at the Mesta Machine Co. His background of experience includes Wisconsin Steel Works of International-Harvester, Western Cartridge Co., Koppers Co. and Carnegie-Illinois Steel Corp.

• **Thomas S. Wilmeth** has been named assistant production control manager of Allis-Chalmers general machinery, West Allis works, Wis. He succeeds **R. L. Brueswitz,** resigned. Mr. Wilmeth has been with Allis-Chalmers since 1936. Recently he had been assistant superintendent of material control. **Frank A. Young,** a representative in Allis-Chalmers Duluth, Minn., branch office since 1944, has been named manager of the office.

• **C. E. Palmer,** former works manager, has been named vice-president in charge of manufacturing of Borg-Warner Corp., Mechanics Universal Joint Div.'s plants—the one in operation at Rockford, Ill., and the one now under construction in Memphis, Tenn. **Fred M. Potgieter** has also been elected vice-president and will have charge of truck, agricultural implement, industrial and aviation sales.

• **Henry V. Bootes,** formerly sales agent for the American Car & Foundry Co., has been appointed district sales manager, New York sales district. He will continue to make his headquarters in New York. Mr. Bootes was previously district manager of the Ohio Injector Co.

• **J. Paul Ahlbrandt,** former production analyst for the war production board, has been appointed to the newly-created position of director of manufacturing of the Hamilton Mfg. Co., Two Rivers, Wis.

• **A. L. Martinson** has been appointed manager of sales and merchandising for the hardware division of E. C. Atkins & Co., Indianapolis. For the past 10 years he has been supervising the selling of hardware on the West Coast for the Atkins Co., with headquarters at the Portland branch.

• **E. Kyndberg** has been made general sales manager, Cyclone Fence Div., American Steel & Wire Co., with headquarters at Cyclone's main office, Waukegan, Ill. **J. F. Boyce** has been appointed district sales manager at Waukegan, and **R. W. Ewart** has been made district sales manager of the southeastern district. **J. D. Filer** has been promoted to the position of assistant district sales manager of the eastern district. Mr. Kyndberg first became associated with American Steel & Wire Co. in 1912. In 1920 he joined Cyclone Fence as a fence machine operator and in 1921 was transferred to the sales department. He has held important positions in the Fort Worth, Tex.; Newark, N. J., and Waukegan offices of Cyclone and has been district sales manager of the latter since 1935. Mr. Boyce became associated with Cyclone Fence in 1935 as a salesman and has been sales manager of the southeastern district since 1945. Mr. Ewart joined Cyclone Fence in 1928 as a fence erector in Buffalo. He subsequently served in a sales capacity in Cleveland, Buffalo and Savannah, where he had been since 1945 and where he will remain in his new position. Mr. Filer has been a salesman in the Newark office of Cyclone Fence since 1945, where headquarters for his new duties will be located.

• **C. W. Wheatley,** who has been on the staff of the vice-president in charge of manufacturing at the A. O. Smith Corp., Milwaukee, has been appointed general manager of the firm's plant at Houston. He succeeds **Ben F. Bart,** who becomes executive administrator for the southwest district, covering eight states.

• **James D. Fosdick** has been named a territory representative in the western division for the merchandising division of the Electric Auto-Lite Co., Toledo.

• **William R. Downer** has been appointed new district representative of the Auto-Lite Battery Corp. in Charleston, W. Va.; **Clyde M. Petre,** in Des Moines, Iowa, and **Donald D. Graham,** Burbank, Calif.

• **Ray Stearns,** engineer in charge of General Electric Co.'s marine and aeronautics engineering division, Schenectady, has retired after 45 years' service. He will be succeeded by **H. C. Carroll,** now assistant engineer of the division.

• **Stanley M. Claster** has been appointed assistant district manager of Luria Bros. & Co., Inc., Philadelphia. He has been assigned to work with J. L. Gordon, the southwestern district manager in charge of the St. Louis, Houston and Pueblo offices. Mr. Claster's headquarters will be at St. Louis. **John L. Crum** has also been appointed assistant district manager of Luria Bros. & Co., Inc. He will assume the responsibility for and take complete charge of the Pueblo, Colo., office and the Rocky Mountain district. His new duties will be performed in the Luria office in Pueblo.

• **William L. Hauck** has been appointed eastern district sales manager of the Weatherhead Co. of Cleveland, with headquarters at New York. Mr. Hauck was formerly sales manager of the Trageser Copper Works, Maspeth, N. Y., and district sales manager for the Scaife Co. in New York. **A. F. Spring** has been appointed to the newly-created position of export manager of Weatherhead. He formerly headed the Continental Trading Corp. Mr. Spring will have charge of all company exports throughout the world and will maintain his office at the main plant in Cleveland.

• **J. B. Huntress,** former sales promotion manager, has been appointed director of advertising and sales promotion for the Nash Motors. Div. of Nash-Kelvinator Corp., Detroit, and **W. A. Keller,** formerly in charge of service promotion, has been appointed sales promotion manager.

• **F. M. Sloan,** a veteran of more than 20 years in the communications and radio industries, has been appointed manager of the Westinghouse Electric Corp.'s home radio division, Sunbury, Pa. He succeeds **Harold B. Donley,** who has resigned.

• **Allen H. Gardner** has resigned as president and treasurer of the Colonial Radio Corp., Buffalo, but will continue as a director.

• **L. A. Weom** has been appointed manager of Fairbanks, Morse & Co.'s pump division to take the place of **Arnold Brown,** who has resigned. Mr. Weom has been with the company since 1929 with exception of 3½ years spent in the U. S. Navy.

• **Dr. Ford R. Lowdermilk** has been appointed supervisor of the development division in the research and development department of the Pennsylvania Salt Mfg. Co., Philadelphia. Dr. Lowdermilk replaces **Frank R. Murphy,** who has been appointed assistant production manager in Pennsalt's manufacturing department. Before joining Pennsalt, Dr. Lowdermilk was associated with the Barrett Div. of the Allied Chemical & Dye Corp. in the research and development department and as technical assistant to the chief chemical engineer.

• **Beaven W. Mills** has been appointed art director of Robert Gair Co., Inc., New York.

• **William S. Straub** has been appointed superintendent and **Leonard J. Rimlinger** and **Ed. J. Corell,** assistant superintendents, at Pittsburgh Plate Glass Co.'s Barberton, Ohio, plant. Mr. Straub, assistant superintendent at the Barberton plant since 1941, succeeds **R. L. Hutchison,** who has been named general superintendent for all plants operated by Columbia Chemical Div. and the Southern Alkali Corp., a Pittsburgh Plate subsidiary. Mr. Rimlinger will serve as assistant superintendent in charge of maintenance and engineering. He has been associated with Pittsburgh Plate Glass Co. since 1926, and during the past 13 years he has held the positions of assistant chief electrician, electrical engineer, and chief maintenance engineer at the Barberton unit. Mr. Corell has been named assistant superintendent in charge of production. He joined the Columbia Chemical Div. at Barberton in 1934. During the past year he has served as production superintendent.

...OBITUARY...

• **Andrew M. Snodgress,** 53, since 1932 production manager General Electric Co., Pittsfield, Mass., apparatus plant, died Aug. 25. He started to work for the company in 1911.

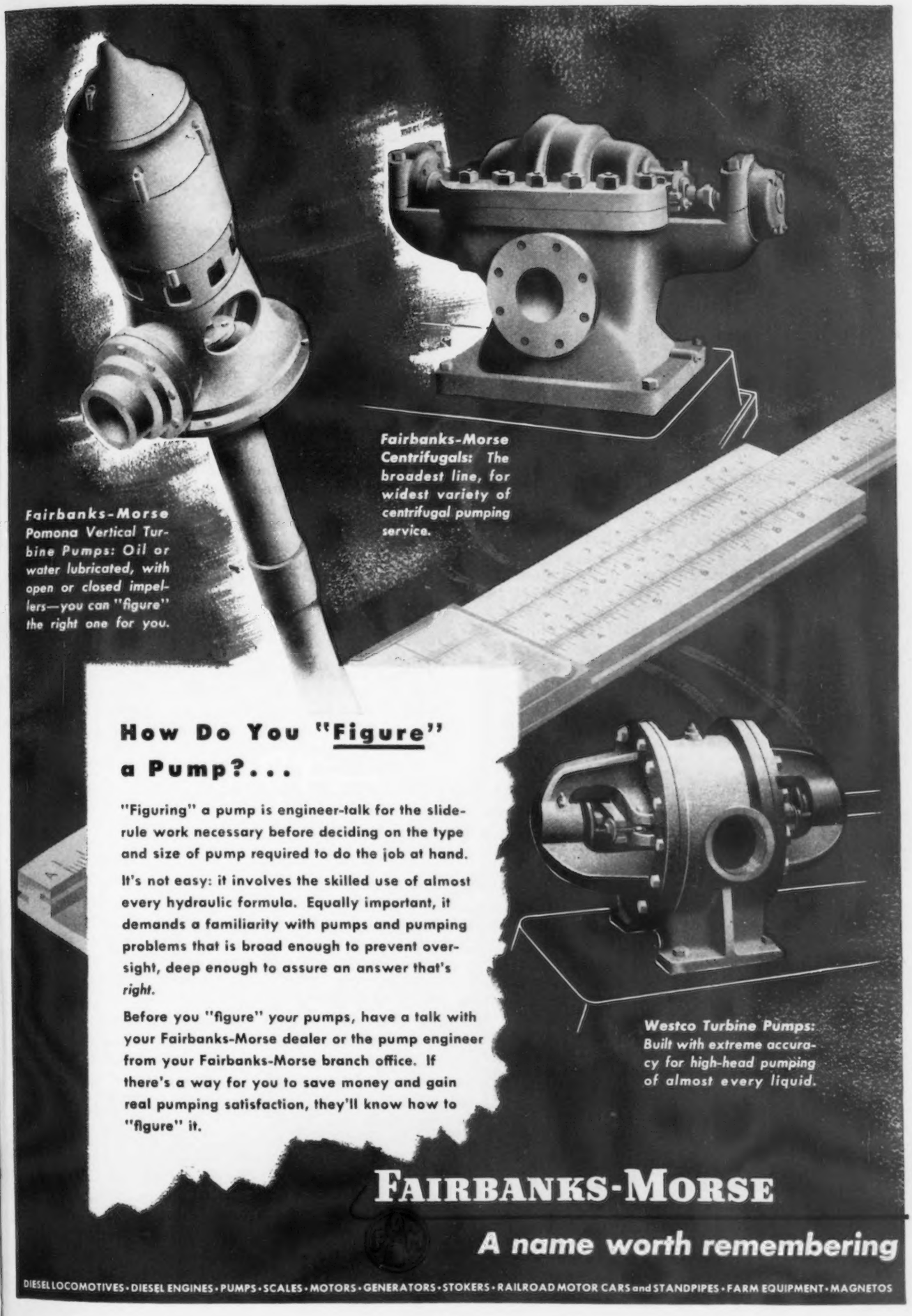
• **W. A. Erickson,** sales manager of the New York office of the Heald Machine Co. for the past 23 years, died Aug. 23. He had been associated with the company for 38 years.

• **Walter J. Bothwell,** organizer and president of Plymouth Steel Co., Detroit, died recently.

• **Henry W. Thomsen, Sr.,** 63, superintendent of Burke Steel Co., Inc., Rochester, N. Y., died Aug. 23. He served in his last position for 25 years.

• **Maurice Hooff,** 47, general production manager of the Hyster Co., Portland, Ore., died Aug. 22.

• **George W. Dewees,** for 34 years a member of the factory, engineering and sales staffs of SKF Industries, Inc., Philadelphia, died Aug. 19, of a heart attack. He was Florida sales and service engineer for the firm at the time of his death.



Fairbanks-Morse Pomona Vertical Turbine Pumps: Oil or water lubricated, with open or closed impellers—you can "figure" the right one for you.

Fairbanks-Morse Centrifugals: The broadest line, for widest variety of centrifugal pumping service.

How Do You "Figure" a Pump?...

"Figuring" a pump is engineer-talk for the slide-rule work necessary before deciding on the type and size of pump required to do the job at hand.

It's not easy: it involves the skilled use of almost every hydraulic formula. Equally important, it demands a familiarity with pumps and pumping problems that is broad enough to prevent oversight, deep enough to assure an answer that's *right*.

Before you "figure" *your* pumps, have a talk with your Fairbanks-Morse dealer or the pump engineer from your Fairbanks-Morse branch office. If there's a way for you to save money and gain real pumping satisfaction, they'll know how to "figure" it.

Westco Turbine Pumps: Built with extreme accuracy for high-head pumping of almost every liquid.

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DIESEL LOCOMOTIVES • DIESEL ENGINES • PUMPS • SCALES • MOTORS • GENERATORS • STOKERS • RAILROAD MOTOR CARS and STANDPIPES • FARM EQUIPMENT • MAGNETOS

Industrial News Summary...

- **No Relief in Sight for Steel Shortage**
- **Repair Programs Still Hit Steel Output**
- **Auto Makers Keep Pressure on for Steel**

THE current steel shortage as measured by urgent customer demand is expected to last for the next several months at least. It may become far more serious before real relief is effected. The most serious shortage involves flat-rolled steel products used by automobile makers and other manufacturers of consumer goods; pipe runs a close second.

During the past few weeks a battle royal has been going on quietly between major auto makers and steel companies. Automobile producers want more steel than they are getting. But the chances are that they will not be successful in their insistent demand that they obtain 17.3 pct of total steel output which they got in 1929 rather than the 15 pct which they are now getting.

Steel executives will not yield the additional steel which the auto industry wants so desperately. The existence of new consumers, which has assumed greater importance since 1929, will force steel mills to deliver at about the same rate next year as they did during 1947. There is no indication that any steel company can find extra tonnage to ship to motor firms regardless of pressure from that major consuming quarter.

It is expected that with automobile companies actually setting up their production schedules on the basis of far more steel than they can possibly obtain periodic shutdowns at manufacturing plants will occur and the reason will be given as "a shortage of steel." This, despite the fact that every steel company is bending over backwards to see that auto makers get their fair share of available finished steel products.

THE enforced shutdown of steel plants in the Pittsburgh district this week, when the outlaw rail strike by midweek had caused a loss of more than 115,000 tons of ingots and more than 82,000 tons of pig iron, will serve to aggravate the current steel shortage condition which has been growing for the past few months. Worn out equipment, emergency repairs and general rehabilitation are the major factors which are continually forcing the steel industry into an embarrassing position of defending its capacity which, it claims, is adequate for a long pull.

Wholly unlooked for by some steel officials has been the substantial increase in demand for flat-rolled material from consumers who are now starting up operations at a high level after vacation and inventory shutdowns. While some products, such as plates, shapes, and structurals are approaching a normal market condition, all records in requirements for flat-rolled products are being broken. Most mills are jamming every bit of semi-finished material not needed on other mills into flat-rolled production channels. Such efforts, however, are being continually offset by sudden breakdowns, freight car shortages, blast furnace repairs and the general inability to obtain enough metallics to keep openhearths at maximum capacity.

The industry had expected that its equipment would be badly in need of extensive repairs after several years' running without stoppage, during the war days. But the problem has become much more serious than had generally been anticipated. Some firms are being embarrassed by the extended time necessary to obtain shipments of material for relining blast furnaces. In the past week there have been at least three instances of mechanical failures which have cut deeply into the production of finished steel.

THE steel ingot operating rate this week dipped 7.5 points to 85 pct from last week's revised rate of 92.5 pct. All of this decline was due to the loss in the Pittsburgh district, where the preliminary operating rate for this week is 68 pct of capacity, down 30 points from last week's revised rate of 98 pct. Due to the nature of the shutdowns an end to the railroad strike would find recovery to maximum levels difficult to make in less than a week.

Overshadowed by the clamoring for steel products is the current shortage of pig iron. Within the next few months the difference between pig iron supplies and actual requirements will reach an all-time high in the industry's history. The impact of this situation will be felt upon foundries, cast iron pipe makers and small steel plants that must buy their pig iron in the open market. Extensive blast furnace repairs are the cause of this trend.

The scrap market this week was resisting downward tendencies which might have been present. A slight technical change in the Philadelphia district reduced THE IRON AGE scrap composite price to $37.75 a gross ton, down 8¢ from last week's figure of $37.83. THE IRON AGE pig iron composite price is down 15¢ a ton this week to $36.93 a gross ton.

While emphasis in the current steel demand picture has been on sheets and strip, oil and gas companies are experiencing one of the worst times in their history in trying to obtain enough oil casing, drill pipe and line pipe. Some of the means by which pipe is being finally produced make "Alice in Wonderland" simple reading. Deliveries extend as far as 1949, 1950 and, in some cases, 1951.

• **STEELWORKER EARNINGS**—Average steelworker earnings increased by $3.33 a week during the second quarter 1947, according to the Dept. of Labor, rising from $51.78 in April to $55.11 in June. Working hours remained constant at 40.4 during the period. Average weekly earnings of all industrial workers have reached a new high of $49.37, as of July 1, rising by almost $1 during June. Because of taxes and increased cost of living, the Department said gloomily, the $50 wage (expressed in terms of 1939 dollars) amounted to only about $26 for unmarried workers and $30 for a married worker with three dependents. Although shutdowns and work stoppages for various causes have reduced the automotive work-week to 38.7 hours, the industry's average wage had reached $57.40 by June, about $2 below the wartime level when the work-week was almost eight hours more. By June, after the memorial shutdown and with a new contract, the bituminous coal miner was averaging $67 and the anthracite miner, about $62.37. Both were working slightly longer work-weeks.

• **GERMAN COAL**—Hard coal production in the British occupation zone during July rose to 224,900 metric tons daily, highest output since hitting a peak of 230,000 tons last March, the War Dept. announces. Output of hard coal in the French zone amounted to 35,000 tons daily.

• **FRENCH ALLOY STEEL**—Producers are faced with increasing competition from special and alloy steel producers of Great Britain, Sweden and Czechoslovakia, whose prices are reported to be lower. This argument has been given by steel firms to explain why the quotas fixed by the government for exports of special and alloy steels have not been fulfilled. Insufficient power and ferro supplies and shortages of manpower, are said to be limiting the production though every effort has been made to reach a level much higher than in the prewar period.

• **CANADIAN RECORD** — Steep Rock Iron Mines Limited set a new monthly high in August with shipments of 237,424 tons of high grade iron ore from its Western Ontario mine. Shipments for the year to September 1 total 784,626 tons, making the Canadian company's B orebody one of the largest producing mines on the North American continent. The company is currently making plans to develop four additional mines in the same iron ore range on which the B orebody is located.

• **NEW PIPE LINE**—Socony-Vacuum Oil Co. plans construction of a 127-mile, 4-in. and 6-in. pipe line from South Portland, Me. to Hollowell and Bangor and a plant at Auburn having a potential capacity of 500,000 gallons a day. The approximate cost will be $1 million. Project will be started next year and completed late in 1948 or early in 1949.

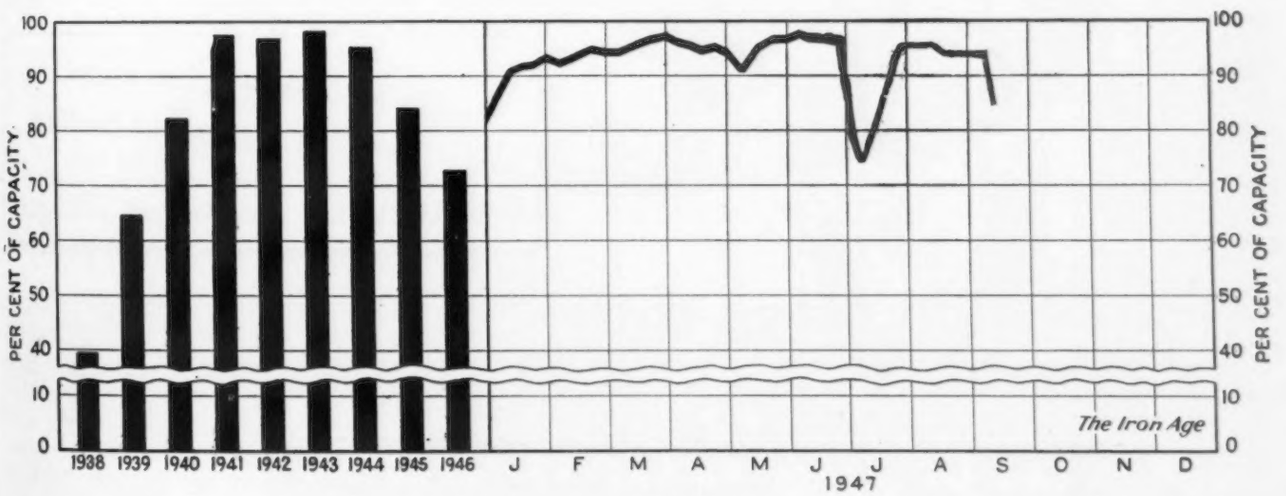
• **FRENCH MODERNIZATION**—The report of the Longwy steelworks states that modernization plans have been established within the frame of the Monnet Plan and along the broad lines of the plans established in 1938 which already are under way. Among the new plants put in operation in 1946 are: A new openhearth furnace in the Mont Saint Martin Div.; an automatic casting machine for pig iron at Thionville Div.; sintering plant, electrification program in Mont Saint Martin and the modernization of thin and medium sheet rolling mills in Sedan.

• **BELGIAN OUTPUT**—Production of steel amounted to 239,000 metric tons in July, a record for the postwar period. A new blast furnace of 1000 metric tons capacity is under construction at the Chatelineau works of Sambre at Moselle and is intended to be put into operation at the beginning of 1948. Preparatory works for erection of a new semi-continuous mill for thin sheets have begun at the Flemalle works of Cockerill.

• **DIRECTED LABOR AGAIN**—Bitter pill for the Labor Party in Britain is the necessity for once more applying the direction of labor. Workers will get their jobs through the government, and employers will get their workers through the same agency. There will be no actual drafting of labor, but the man who refuses to take a job offered by the agency will be ineligible for unemployment benefits. The program goes into effect Oct. 1.

• **BRITISH OUTPUT**—Weekly steel production in July averaged 211,700 long tons, compared with 254,000 long tons in June. The July production is equal to an annual rate of 11 million long tons, against a 13.2 million long tons rate in June. Pig iron output is controlling production of steel at present, but two more blast furnaces are going into production this month, and six more are scheduled to be lighted in September. Of those scheduled for September, two are new furnaces constructed as a part of the British postwar modernization program.

Steel Ingot Production by Districts and Per Cent of Capacity



Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
September 2	98.0*	90.5*	90.0*	94.0	97.0	102.0	100.0	97.0	102.5*	108.0	96.0	82.0	95.5	92.5*
September 9	68.0	94.0	89.0	94.0	95.0	102.0	90.0	99.0	96.0	97.0	96.0	82.0	94.0	85.0

* Revised.

STAINLESS STEEL RINGS
by AMERICAN WELDING

Compared with any other manufacturing method, *welded* stainless steel rings prove to be equally efficient and much less expensive. Records show that there is a substantial

SAVING IN THE PRICE OF RINGS
SAVING IN THE COST OF TOOLING

when stainless rings are produced by the welding process.

If you use stainless rings, or any other welded product, a few moments spent with our representative may prove to be very advantageous. May we hear from you?

Saving in the Price of Rings
Saving in the Cost of Tooling
with WELDED *Stainless Rings*

THE AMERICAN WELDING
AND MANUFACTURING COMPANY
1900 GRISWOLD ST. • WARREN, OHIO

Automotive Plants Face Recurrent Shutdowns Through 1948

Industry Bases Plans on More Steel Than it Will Obtain; Other Demands Heavy

o o o

By JACK HIGHT
Associate Editor

o o o

Pittsburgh

• • • **Automobile manufacturing** operations in Detroit during the next 16 months are apt to be marked by recurrent shutdowns, similar in nature to those recently experienced which were attributed to steel shortages. Steel men state that although in strict sense, the auto makers will be forced to close repeatedly for lack of steel, it would be more accurate to attribute the production losses to over-optimistic planning on the part of the auto makers.

For example, attempts are being made this week to draw up steel delivery schedules for the big auto makers for next year. Using their powerful bargaining position as major consuming companies the auto makers are demanding that steel makers revert to the 1929 distribution pattern for 1948. The boom year is dear to the hearts of the auto industry executives, as 17.3 pct of the finished steel produced that year went to the auto industry.

The additional point that the auto industry has never since obtained that much of the nation's steel supply is being conveniently ignored by the auto makers as they pound the table for bigger steel shipments. Since 1929, large new consumers, particularly of flat-rolled products, have become important factors in the consumption of steel. After hitting the peak that year, the auto industry receded to a point where for a number of years it has been receiving 15 pct of the steel output. After a start early this year slightly below that figure, the shipments to the auto makers have increased slightly to a point where the shipments for 1947 promise to average almost exactly 15 pct.

Auto makers, then, are demanding that they receive 2.3 pct more of the total available steel next year than they have been receiving. Steelmakers, harassed by the increasing government pressure to deliver on several specified "essential" programs, will be unable to disrupt their delivery pattern as requested by the auto producers.

Washington officials have made a substantial rail delivery program to South America a "must" on steel order books, are pushing the unprecedented 10,000 - unit - a - month freight car program to the hilt, have just laid out steel demands for Ruhr reconstruction, and promise to make the cup run over by adding a Marshall program calling for still more steel next year.

Auto men, however, are not interested in other people's problems. All they are worried about is getting more steel next year. They hoped to make 5 million cars, trucks, and buses this year, but actual production will be nearer 4.5 million units. Using their high-powered statistics based on bludgeoning 17.3 pct of the nation's steel out of the mills, the men from the automobile plants insist on setting up their production schedules for 5.75 million units next year.

Steel men are agreed that there is no possibility of the auto industry improving the 15 pct of finished steel which will go to the auto makers this year. Auto men have based their schedules on 91 million net ingot tons of practical capacity in the steel industry, and fall into the easy error of estimating that out of this capacity the steel industry ought to be able to produce 90 million tons of ingots.

A better estimate of the optimum 1948 steel ingot output, according to steel men, would be about 87 million tons. The arrears of repairs that are catching up with the steel

The Phantom 8

industry will be setting a top limit on the weekly steel operating rate throughout next year. As long as efforts are being made to work repairs into the operating schedule with a minimum tonnage loss, the repair program must be spread over a long period of time. Barring serious labor trouble, in either coal or steel, the 87 million ton figure is considered to be the top.

Auto men have based their figures on 1948 deliveries of 11,200,000 tons of finished steel, while the most that they can hope to get under existing circumstances will be 9,396,000 tons. Thus, according to the best advance promises that steel men can make, Detroit should be realistically planning on a 5 million car year in 1948.

Instead, the auto makers have already started to move their production schedules upward toward an annual rate of 5.75 million units. Steel men feel that this constant pressure upward in the auto industry operating rate is at least partially responsible for the layoffs which already have occurred. As far as 1948 is concerned, mill officials see only continued interruptions in auto production, all technically due to steel shortages, unless the automobile manufacturers accept the simple arithmetic of the steel shortage.

Interest in Illinois Furnaces Quickens As Sharon, Kaiser Protest

St. Louis

• • • **Interest has suddenly** quickened on the sale of the two DPC blast furnaces located in Granite City which have been run under lease by Koppers Co. The property listed as Plancor 348 was widely advertised back in March, at which time very little interest was aroused among prospective buyers. On Aug. 15, when the bids were opened, it was found that two interests had made substantial bids and that the Sharon Steel Corp. and Kaiser were vigorously protesting any sale of the property until they had been given further chance to appraise the plant.

The WAA office in Kansas City informed THE IRON AGE that as of the middle of last week the bids were before the review board in Washington, and as far as they knew the protests registered by Kaiser and Sharon Steel had not yet held up the final disposition of the plant. The Curran Carbonizing & Engineering Co. of St. Louis bid a total of $2¼ million with payments stretched over a considerable number of years. Mr. Kern was the principal in this offer. The other offer received was from the Fulton Iron Co. of Cleveland, which bid $1,750,000 cash. Inspection of the plant and the offer made by Fulton was through Harry E. Holloway.

Both Kaiser and Sharon Steel filed protests that they had not received sufficient time to inspect the plant and submit an intelligent bid. On Aug. 6 the WAA office in Kansas City wired about 40 prospective clients that the final bids must be in on the 15th of that month. The problem before the review board in Washington now is whether to delay final action on this former DPC plant or to accept one of the two bids received. The Kansas City office of WAA told THE IRON AGE that the two bids received were very nearly equal as far as the realization in cash which the government would get out of the sale.

NLRB Throws Out 50 Foremen Cases

Washington

• • • **Fifty election cases** involving 5400 supervisory employees in 16 states have been thrown out by the National Labor Relations Board because of lack of jurisdiction.

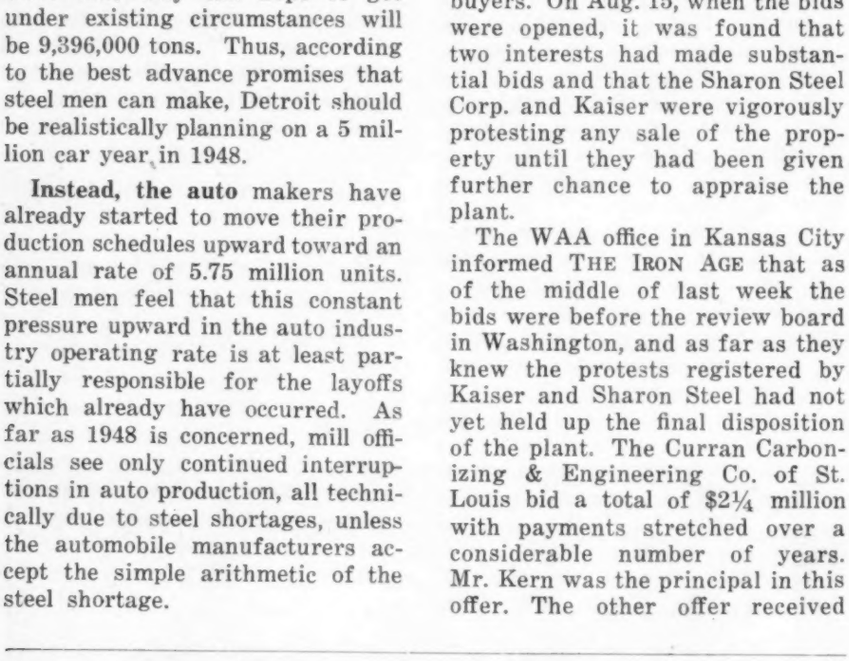
Affected were union organizations of Jones & Laughlin Steel Co., six plants of Republic Steel Corp., the Chrysler Corp., the Tennessee Iron, Coal & Railroad Co., and numerous coal mining firms.

The action resulted from the Taft-Hartley Act which removed supervisory personnel from the definition of employees for the purpose of bargaining.

Additional firms affected by the election dismissals included: Firestone Tire & Rubber Co., and United States Rubber Co., in Calif., five plants of the Black Hawk Coal Corp., Sunlight Coal & Tecumseh Coal Corp., Lorain Coal Co., Youghiogheny & Ohio Coal Co., Warner Collieries, Butler Consolidated Coal Co., Castle Shannon Coal Co., Ebensburg Coal Co., Heisley Coal Co., seven Hillman Coal Co., mines, Jamison Coal & Coke Co.

Also, Monroe Coal Mining Co., two mines of Northwestern Mining & Exchange Co., Pittsburgh Coal Co., Red Lands Coal Co., Rochester & Pittsburgh Coal Co., Vinton Coal & Coke, Canyon Coal & Coke, Rosedale Coal, Christopher Coal, four mines of Purseglove Coal, Costanzo Coal, Ex-Cell Coal Co. and others.

BIG BUSINESS: *Philip Murray at his desk in Pittsburgh with his CIO officers where they recently outlined union policy on the Taft-Hartley Act. Times have changed in the past 10 years; this group looks like any other big business meeting.*



Expect Special Session of Congress to Act on Marshall Plan

Approval To Be Reluctant On Watered-Down Version of $30 Billion Project

Washington

• • • **A special session of** Congress within the next few weeks to put its reluctant seal of approval on a watered-down version of the $30 billion Marshall plan may now be expected.

Pressure is being exerted upon Senator Vandenberg, R., Mich., head of the Senate Foreign Relations Committee, to spearhead what the administration hopes will be a strong bipartisan endorsement of the European aid program. Actually, the program will have tough sledding in Congress and Mr. Vandenberg will make it clear that congressional willingness to continue handing out dollars is nearing an end.

Steel exports—which may run as high as 12 million tons a year under the Marshall plan—are a principal cause of concern to Senator Martin, R., Pa., chairman of the Senate Small Business subcommittee on steel. Consumers of steel for months have been pleading with Senator Martin for curtailed exports. A number of end-users are being forced out of business.

Small businessmen reason that if the current export rate of 6.5 million tons annually is creating havoc among small enterprise, an annual export rate of 12 million tons under the Marshall plan will strike a death blow at many small metal fabricators. At what expense, they ask, should the United States undertake the reconstruction of European industry?

Actually, Marshall plan or not, the authority for further foreign relief already is on the books. The Second Decontrol Act of 1947 (Public Law 188-80th Congress) which was signed by President Truman on July 15 declares it to be public policy to eliminate wartime controls except to the extent necessary to "aid in carrying out the foreign policy of the U. S." Thus, assuming that the Marshall plan will meet with eventual approval, only administrative funds and authority will be required.

Barriers set up in the form of export licenses would be swept away administratively, since the State Dept. is authorized to approve special foreign relief projects. Exports earmarked for these projects do not fall in license categories of the Office of International Trade. All such exports are ex quota. Under the Marshall plan steel exports would be ex quota.

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Another loophole in the government's export control program is the 1941 Hyde Park Agreement, which permits ex quota exports to Canada. Signed by President Roosevelt and the Prime Minister of Canada, it encompasses a general reconversion program for the U. S. and Canada. But this document—if such exists—has never been made public.

Tyler Wood, special assistant to the Assistant Secretary of State for Economic Affairs, told Senator Martin's steel subcommittee that he had "not actually seen the document" but understood its purpose is to "give the Canadians the benefit of whatever priorities we use here and also not to place barriers to trade with them any more than we would with one of our own states."

Following a considerable amount of prodding by the steel subcommittee, Mr. Wood finally admitted that he would "keep in touch very closely with the Canadians, and we ought to discuss with them jointly these shortages, and to the extent that their demands can properly be made somewhat less in certain areas, I think we ought to discuss those questions with them." But the department admits that thus far it has failed to make progress toward plugging this export leak.

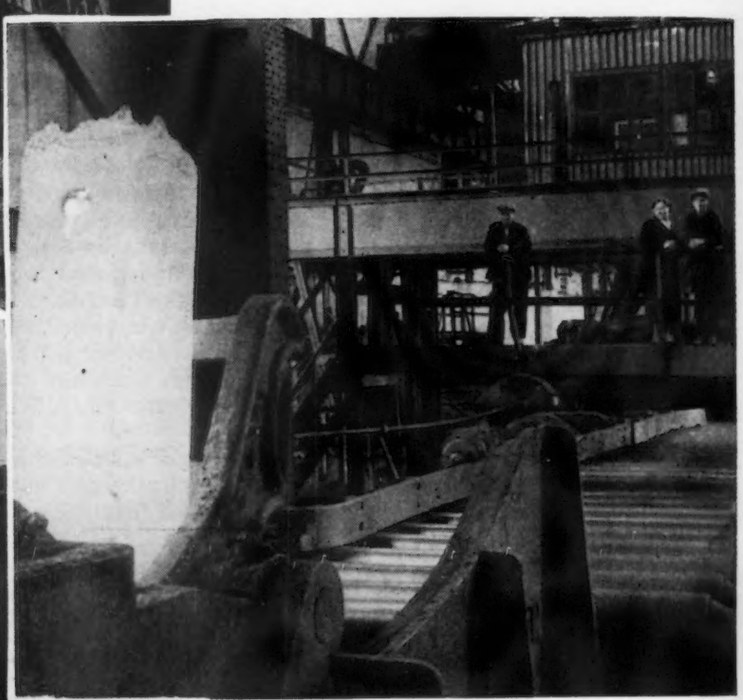
Senator Martin's steel subcommittee has thus far met with moderate success in its attempts to divert domestic steel production to small manufacturers, rather than for export markets. It accomplished extension of export controls on steel for one year to July 1948; it forced the Commerce Dept. to require statements of destination and end-use from exporters, and provided penalties for misrepresentation, forgery or resale of export licenses.

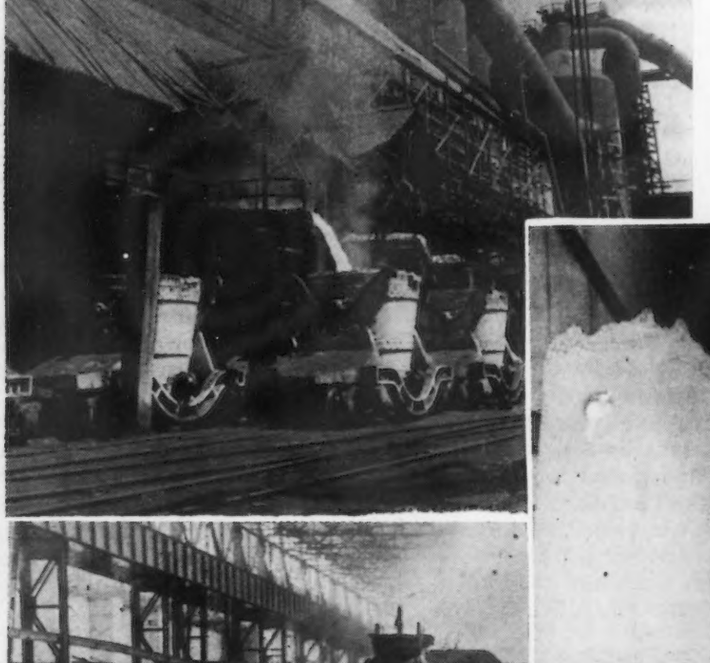
Meanwhile, Senator Martin is meeting this week with leading producers in a further attempt to bring about action to ease domestic shortages. The steel subcommittee has not, despite reports, made any recommendation concerning increased producing capacity. Senator Martin is simply fishing for producers' views and is mainly interested in industry predictions as to output in the near future.

FLOATING FURNACES: *The first four of eight all-welded gas tube type annealing furnaces begin their barge trip to the new sheet and plate rolling mill which Aluminum Co. of America is building at Davenport, Ia. Four similar furnaces also made the trip which started by truck at Alcoa, Tenn. Since the units are lined with aluminum insulating foil they would have had to be relined if they were broken down to make the trip by rail.*

Russia's Largest Steel Mill Is at Magnitogorsk

• • • Few closeup photos of Russia's steel mills have ever been released. These show Magnitogorsk, where openhearth No. 22 was recently completed. According to Russian sources, the freight traffic serving this plant exceeds that of all the railways of Finland or Hungary and its ore mines yield more ore than all the 300 mines of the Urals did 30 years ago. During the war the steel for every second shell came from this plant.





ONE of the plant's two blooming mills, above, receives a 7-ton ingot. Schedules call for 1947 output here to be "10 pct above the 1943 figure." By 1950 it is slated to account for 152 tons of pig iron and 132 tons out of each 1000 tons produced in the country.

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MAGNITOGORSK is said to have six blast furnaces. Capacity is not disclosed. Near the mill, according to Russian sources, is a large city with universities, schools, clubs and theaters and which every year receive "big funds to ameliorate the living conditions of the metalworkers."

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THE steel rolling department, left, has eight rolling mills. The plant also has eight coking batteries and considerable auxiliary equipment. A new town for the plant workers now going up on the right bank of the Ural River, is scheduled to have a population of 100,000 by 1950.

Foundries Warn Their Customers of Coming Higher Casting Prices

Cleveland

• • • **Foundries in this area,** badly hit by rising costs of materials and labor, are giving serious study to the need for raising their prices for castings. Many of them are making detailed cost studies and some have notified their customers of an impending price increase later in the year.

The action of Republic Steel Corp. recently in tying its pig iron prices to the quoted scrap markets at Cleveland and Buffalo may be considered the primary stimulus to early price adjustment. However, it is freely admitted by foundry executives that their use of pig iron in the past has represented an appreciable saving over cast scrap which continues even at the current Republic pig iron prices.

Other factors of increasing cost include scrap, coke, and labor, as well as a below capacity level of operations caused by raw material shortages. Many foundries in this area are forced to rely on very poor quality beehive coke which requires a much greater coke consumption per ton of finished castings.

Foundry backlogs in this area average 60 to 90 days and production is gradually creeping up on casting order books. An analysis of a typical foundry backlog indicates that 50 pct of these orders represent unreleased or deferred deliveries caused by the lack of steel components or other parts not readily available to foundry customers. In addition, new orders have not been coming into foundries in their former volume.

The accompanying analysis of costs compiled by one foundry in Ohio shows significantly over a long period how foundry costs have increased.

Foundry Commodity Delivered Purchase Prices 1936 to 1947

ITEM	Jan. 1, 1936	Jan. 1, 1939	Jan. 1, 1942	Jan. 1, 1945	Jan. 1, 1946	Jan. 1, 1947	July 1, 1947	Aug. 1, 1947
Pig iron, g.t.								
Sil. 3.00-3.25%	$21.00	$22.50	$26.50	$28.21	$29.28	$36.51	$42.14	$42.14
Fdry. coke, n.t.	10.05	10.25	10.00	13.35	13.75	15.89	17.00	18.00
Htg. coke, n.t.	6.00	6.25	6.00	7.10	7.50	11.89	11.89	14.00
Coal, n.t.	2.02	2.12	2.70	6.20	5.42	7.56	8.50	8.50
Auto cast, g.t.	15.50	14.50	20.00	20.00	20.00	38-45	45-47	50.00
Steel rails, g.t.	17.25	19.75	22.87	21.50	21.50	42-45	44-46	46.00
Keener sand, n.t.	2.63	3.19	3.21	3.16	3.16	3.00	3.34	3.34
Lake sand, n.t.	2.10	2.29	2.49	2.49	2.49	2.64	2.64	2.64
Fluxing stone, n.t.	1.56	1.60	1.74	1.74	1.74	1.81	2.04	2.04
Firebrick, M.	37.50	31.35	36.00	37.00	38.15	51.00	51.00	51.00
Fireclay, n.t.	2.50	2.50	2.25	2.30	2.35	5.38	5.64	5.64
Core oil, gal.	.42	.41	.55	.74	.71	1.15	1.34	1.27
Dextrine, cwt.	4.05	2.70	3.70	4.61	4.61	6.00	7.45	7.45
Steel grit, n.t.	60.00	75.00	76.80	71.80	63.00	90.00	95.00	95.00
Flask lumber, 1000-ft.	50.00	50.00	60.00	80.00	80.00	98.00	98.00	98.00
Crating lumber, 1000-ft.	18.50	26.00	33.50	60.00	80.00	94.50	90.00	90.00
Bracing lumber, 1000-ft.	23.00	23.00	32.00	60.00	75.00	94.50	90.00	90.00

Iron, Steel Dividends Up 24 Pct for 3 Months Period Ended July 31

Washington

• • • **Publicly reported** cash dividend payments by iron and steel corporations for the 3-month period ended July 31 were 24 pct above those paid during the similar period last year, it has been reported by the Office of Domestic Commerce.

Payments to stockholders amounted to $65 million for the 3-month period, the report stated, as compared with $52.5 million for last year. It is estimated that publicly reported declarations account for about 60 pct of all cash dividends paid.

As a whole, cash dividends paid by all the nation's corporations were up 16 pct over last year, a total of $1.2 billion being reported for 1947 against slightly more than $1 billion for the same 3 months in 1946.

Greatest gain in returns to stockholders, however, were in the mining industry where Commerce said dividend payments rose $25.2 million to $82.1 million during the period.

On the other hand, the Commerce tally showed that dividends in the automobile industry dropped 37 pct below payments for May-June-July 1946. Railroad payments were down 11 pct below the comparable period last year.

Publicly reported iron and steel dividends for July amounted to $15.6 million, a $3.6 million increase over July 1946; mining, $12.4 million as against $4.3 million; and, automobiles, $4.2 million against $3.3 million.

Pauley Is War Dept. Aide

Washington

• • • **Naming of Ed Pauley** as a temporary Special Assistant to Secretary of War Kenneth C. Royall to assist in matters of industrial mobilization has been announced by the War Dept. Mr. Pauley assumed his duties Sept. 3 and will serve during the transition or reorganization period in carrying out the Unification Act.

Rivet Maker Increases Fourth Quarter Prices

Cleveland

• • • **The Champion Rivet** Co. has announced higher base prices on large and small rivets effective Oct. 1. Rivets ½ in. diam and larger will be priced at $5.65 per 100 lb. Small rivets, 7/16 in. diam and smaller will sell at 55 pct of the standard list published Feb. 15, 1947. The company is re-establishing the "price in effect at time of shipment" clause on all quotations and orders.

Export base prices on large and small rivets have been raised effective Sept. 1. Rivets ½ in. diam and larger are now priced at $6.25 per 100 lb in 40,000 lb carloads; at $6.50 in less carloads. Smaller rivets at 40 pct off standard list prices. Export prices are f.o.b. Cleveland, freight allowed to New York.

These price increases are due, the company says, to the increased costs of steel and other supplies, but they have not been adjusted to compensate for the 13½ pct wage increase.

Kaiser Renews His Struggle With RFC; Will Expand Mill

Washington

• • • **Henry J. Kaiser** this week renewed his attempts to get the government to forgive part of the Reconstruction Finance Corp. indebtedness on his Fontana, Calif., steel plant and repeated his belief that unless steel capacity is expanded a recession will result.

The West Coast industrialist announced his intention to float $80 million in Fontana bonds, contingent upon forgiveness by RFC of $34.5 million of Fontana's indebtedness. Mr. Kaiser previously asked RFC to write off some $85 million (THE IRON AGE, Aug. 21, p. 139).

"Fontana is going to expand, whether RFC writes off part of our debt or not," Mr. Kaiser declared. He indicated that if the loan agency did not forgive the indebtedness, the contemplated expansion program would be considerably short of the $80 million mark.

"After talking to four of the largest producers in the country, I am convinced that the present shortage will last at least four or five years," Mr. Kaiser declared. "The steel industry is simply asking for a depression when it says it cannot or will not expand present capacity."

Asked by THE IRON AGE if he would follow RFC's suggestion that he seek Congressional relief from his debt burden, Mr. Kaiser said he wasn't "Ready for that just yet." The government's refusal to permit the refinancing of Fontana "leaves me at present with no alternative but to charge high prices for steel," he added.

Mr. Kaiser criticized President Truman's position on encouraging the Justice Dept. to initiate actions designed to bring prices down while at the same time permitting RFC to insist upon full payment of the Fontana debt. "By permitting the expansion of Fontana now, the government can make a real start toward eliminating this state of confusion," he added.

"It has been argued that the steel industry as a whole should not be asked to make the huge commitments entailed by expansion without some protection against the great loss the industry would incur if our total economy were to shrink at some future time," Mr. Kaiser pointed out.

"I think, therefore, that one or another of various proposals for protective steel expansion should be adopted. The government protected steel expansion during the war through the method of accelerated depreciation, and got an additional $1.2 billion expansion of privately-owned steel-making facilities. The need is no less vital now," he declared.

Mr. Kaiser said he hoped for prompt action from RFC on the part of his latest request for debt reduction. "Any delay will have the effect of stifling the expansion of steel-producing capacity at the very time when the economy of the nation is starving for such expansion of capacity," he wrote to RFC Chairman John D. Goodloe.

Railroads Ask Further Rate Increase; Total Sought Is Now 27 Pct

Washington

• • • **The nation's railroads** this week asked the Interstate Commerce Commission to authorize freight rate increases of 10¢ per ton on iron ore and 10¢ per net ton and 11¢ per gross ton on coal and coke.

For transportation of commodities other than iron ore, coal and coke the roads asked a temporary increase of not less than 10 pct over present rates. The new petition, together with one filed on July 3, brings the average rate hikes sought to about 27 pct.

The request was for an immediate and temporary increase due to "the rising cost of railroad materials and supplies," the railroads said in their request. Spokesmen for the roads pointed out that increases in wages, payroll taxes and prices and materials have risen about $3 billion since 1939.

The roads asked the ICC to keep these temporary rates in effect until the time when such rates as may be authorized by ICC in this case become effective. Costs of operation have risen to about $625 million annually—due to wage and materials costs increases—since the filing of the original petition in July, the roads told ICC.

The requested increases are 38 pct for Eastern Territory and between Eastern and Southern and Western Territories and 28 pct for Southern and Western Territories and between those territories.

Coming Events

Sept. 17-26 National Machine Tool Builders' Assn., machine tool show, Dodge-Chicago Plant, Chicago.

Sept. 18-20 Foundry Equipment Manufacturers Assn., annual meeting, Hot Springs, Va.

Sept. 18-20 National Assn. of Foremen, annual convention, Los Angeles.

Sept. 22-25 Assn. of Iron & Steel Engineers, annual meeting, Pittsburgh.

Sept. 28-Oct. 3 **American Institute of Mining and Metallurgical Engineers**, regional meeting, Denver.

Oct. 2-3 Gray Iron Founders' Society, annual convention, Milwaukee.

Oct. 2-4 Society of Automotive Engineers, aeronautics meeting, Los Angeles.

Oct. 6-7 Packaging Machinery Manufacturers Institute, annual meeting, Springfield, Mass.

Oct. 6-8 American Gas Assn., annual convention, Cleveland.

Oct. 9-10 Porcelain Enamel Institute, annual meeting, Cleveland.

Oct. 16-17 National Conference on Industrial Hydraulics (formerly Hydraulics Machinery Conference), annual meeting, Chicago.

Oct. 18-24 National Metal Exposition, Chicago.

Oct. 20-21 **Society of Automotive Engineers**, production meeting, Cleveland

Oct. 30-Nov. 1 American Society of Tool Engineers, semiannual meeting, Boston.

Oct. 31 Illinois Mining Institute, annual meeting, Springfield, Ill.

Nov. 7-8 Annual Conference on X-Ray and Electron Diffraction, Mellon Institute of Industrial Research, Pittsburgh.

Construction Steel . . .

• • • **Fabricated steel awards** this week included the following:

500 Tons, El Paso, Tex., beam span for the Texas Highway Dept. to Petroleum Iron Works Co., Sharon, Pa.

330 Tons, Austin, Ind., bridge section 2834 to Central States Bridge & Steel Co., Indianapolis.

280 Tons, Wilkes-Barre, Pa., alterations and additions to bottling plant for Stegmeier Brewery Co., to Lehigh Structural Steel Co., Allentown, Pa.

230 Tons, St. Paul, Minn., National Guard Building through Hagstrom Contractor to St. Paul Foundry Co., St. Paul.

125 Tons, Plymouth, Pa., additions and alterations, North Carolina Pulp Co., to Bethlehem Fabricators, Inc., Bethlehem.

• • • **Fabricated steel inquiries** this week included the following:

1700 Tons, Pittsburgh, building for the Duquesne Brewing Co.

911 Tons, Vermillion County, Ill., truss span through State Highway Dept. section 34-Z-F.

900 Tons, Bristol, Pa., plant construction, Seaboard Container Corp.

864 Tons, Clear Creek and Summit Cos., Colo., tunnel and approach on Loveland Pass between Georgetown and Dillon, State Highway Dept., Denver, bids to Sept. 16.

416 Tons, Santa Cruz, Calif., freeway structures between Rob Roy Junction and Morrissey Ave., California Div. of Highways, Sacramento, bids to Oct. 1.

248 Tons, Secaucus & Hudson Counties, N. J., bridge, New Jersey Dept. of Highways.

211 Tons, Du Page County, Ill., bridge span through State Highway Dept. section 58-F and 58-VP.

140 Tons, Jackson County, Ill., bridge span through State Highway Dept. section 11-F.

140 Tons, Macoupin County, Ill., bridge span through State Highway Dept. section DX-SF.

• • • **Reinforcing bar awards** this week included the following:

125 Tons, Park Vermillion County, Ind., bridge contract 2811 Indiana State Highway Dept. through Robert H. King, Danville, Ill., to W. J. Holliday Co., Indianapolis.

100 Tons, Madison, Wis., warehouse for the Wisconsin Hardware Co. through J. H. Findoroff, to Bethlehem Steel Co., Bethlehem.

• • • **Reinforcing bar inquiries** this week included the following:

3000 Tons, Chicago Sanitary District, contract No. 3, South Side intercepting sewer.

2000 Tons, Chicago, Chicago Sanitary District, contract No. 4, sewer.

920 Tons, Santa Cruz, Calif., freeway structures between Rob Roy Junction and Morrissey Ave., California Div. of Highways, Sacramento, bids to Oct. 1.

390 Tons, Los Angeles, undercrossing and retaining walls at Temple St. on Harbor Parkway, California Div. of Highways, Los Angeles, bids to Oct. 2.

195 Tons, San Bernardino Co., Calif., grade and surface between Los Angeles Co. line and Ontario. California Div. of Highways, Los Angeles, bids to Oct. 2.

122 Tons, Clear Creek and Summit Cos., Colo., tunnel and approach on Loveland Pass between Georgetown and Dillon, State Highway Dept., Denver, bids to Sept. 16.

• • • **Railroad inquiries** this week included the following:

The Milwaukee Road's present car program calls for the building of 127 passenger cars, 4620 fifty-ton box cars and 3000 fifty-ton gondolas in the Milwaukee shops. The building program will extend into January 1949.

Rail Strike at Pittsburgh Causes Steel Loss Exceeding 115,000 Tons

Pittsburgh

• • • **By midweek the** outlaw railroad strike at plants of U. S. Steel subsidiaries here had caused the loss of more than 115,000 tons of steel and more than 82,000 tons of pig iron—at a time when the company was struggling to combat carryovers and delayed deliveries.

It will be months before this latest blow to steel output can be overcome—if then. The impact has been so serious that many fabricating companies in this area were forced at midweek to make plans to lay off thousands of workers as stocks of raw material in their plants vanished.

Four large plants of Carnegie-Illinois Steel Corp. were affected—Duquesne works, Edgar Thomson plant, Clairton works and Homestead steel plant. Only a few small open-hearths were operating this week. At the mammoth Irvin works sheets were being rolled but this action was rapidly cleaning up all slab inventory in the plant. At a later date when slabs are moving to this mill again it may be necessary to slow up while sufficient inventories are built up.

The enforced shutdown at the U. S. Steel plants will mean a serious setback to the company's shipping schedules and will be felt by practically every line of finished steel goods. Auto, washing machine makers and other users of flat rolled goods will be hardest hit because there is where the most serious shortages exist at present.

Almost as serious has been the banking of 17 blast furnaces this week and the slowing to half time of two. The country is facing the most serious shortage of pig iron since war days and the loss occurring this week in the Pittsburgh area will have a tremendous impact on merchant iron users, the auto industry and the steel company itself as it struggles to get enough metallics for steel making when its operations are resumed.

The blow to output of the U. S. Steel plants cannot be lessened by other steel makers. Most if not all of them are having their troubles meeting demand from their own customers and their operations are as high as can be expected at this time. The steel loss this week and later if the strike is not settled by the week-end cannot be made up. It becomes another of the long list of factors which are steadily forcing the steel ingot operating rate to levels which conversely expand the amount of unshipped and unfilled steel orders.

The outlaw strike occurred on railroads owned by U. S. Steel which haul raw material to the plants and move out finished material to the main railroad lines. The union has been ordered back by its national officers but the deadlock continued at midweek.

Staff Changes

New York

• • • Thomas E. Lloyd, formerly Pittsburgh regional news and technical editor for The Iron Age, has been appointed machinery editor with headquarters at New York City. George F. Sullivan who has been assistant news editor has been named Pittsburgh regional news and technical editor. Jack R. Hight who was European editor for the past two years has been made associate editor and will assist on news and markets at New York.

Spain's Wolfram to Italy

Paris

• • • **It is reported** that the recent trade agreement between Spain and Italy provides for export of 550 metric tons of tungsten ore to Italy. Mines have been put again in operation and prices on the Spanish market have increased by 80 pct.

Industrial Briefs . . .

• ZIV STEEL EXPANDS — Ziv Steel & Wire Co., Chicago, has announced completion of an expansion program at their Detroit branch. They have increased their space and facilities approximately 25 pct.

• TO REPRESENT — Cleveland Tapping Machine Co., Hartville, Ohio, manufacturer of Cleveland lead screw tapping machines, has appointed The Meehan Engineering Co., 1802 W. Genesee St., Syracuse 4, N. Y., as sales representative for all of New York state north of but not including Sullivan, Ulster and Duchess counties.

• OPENS DISTRICT OFFICE—The Electric Furnace Co. of Salem, Ohio, has opened a Michigan district office at 2631 Woodward Ave., Detroit 1. B. C. Thompson is the district manager.

• BUYS MACHINE SHOP—Wyman-Gordon Co., Worcester, has purchased a machine shop and first-aid building on Gold St., a cafeteria and heat treating unit on Linnehan St. and a substantial amount of machinery integrated with the company's own equipment from the government through the WAA. In addition to producing forgings for orthodox piston-type engines, the company has a substantial research program in connection with new jet and turbine aircraft power plants.

• NEW ENGLAND WAREHOUSE—The Hanson-Van Winkle-Munning Co., of Matawan, N. J., announces the completion of a new office and warehouse at 382 Seymour St., Stratford, Conn. Its purpose is to provide a stock of electroplating and polishing supplies and equipment for quick service and delivery to customers in New England.

• CONTRACT AWARD—F. H. McGraw & Co., engineers and constructors of Hartford, has announced that it had received a contract for the construction of a water filtration plant for the Thomas Steel Co., Warren, Ohio. More than a mile of cast iron pipe will be used in the construction.

• GREAT LAKES DIVISION—Complete finishing service for manufacturers in the Great Lakes area will be available through the new Sherwin-Williams Great Lakes Industrial Div., which was opened in Grand Rapids. Frank E. Ehrett, western Michigan industrial representative since 1936, has been appointed manager.

• NEW SALES OFFICES—New offices at Cleveland and Chicago being opened by the U. S. Steel Corp. of Delaware, for the sale and service of coal chemicals produced by U. S. Steel subsidiaries, has been announced. William K. Wood is in charge of the Cleveland office and William G. Souder in charge of Chicago office.

• AWARDED MEDAL—Dr. Arpad L. Nadai, consulting engineer of the Westinghouse Research Laboratories, has been awarded the Worcester Reed Warner Medal, honoring noteworthy contributions to the permanent literature of engineering, by the American Society of Mechanical Engineers.

• TO BUILD PILOT PLANT—The Research and Development Div. of Pittsburgh Consolidation Coal Co., Pittsburgh, has announced that contract for the design and construction of its coal gasification pilot plant has been awarded to Chemical Plants Div. of Blaw-Knox Co. This pilot plant is a cooperative project sponsored jointly by Standard Oil Development Co. and Pittsburgh Consolidation Coal Co. The purpose of the plant is to ascertain whether a practical and commercial process can be found for making synthetic gas, a first step in producing synthetic fuel from coal. It will be located at Library, near the coal company's research center.

Tin Stocks Decrease; Total Drop 12,000 Tons Since First of Year

Washington

• • • **Tin stocks in** the United States decreased further during the second quarter, registering a total drop of more than 12,000 tons since Jan. 1, 1947, the Office of Materials Distribution reports. Stocks on hand July 1 were more than 25,000 tons below the figure for the same date in 1946.

However, consumption of tin under Orders M-43, and M-81 will be permitted to remain at about first and second levels for the remainder of 1947, officials said. Deficits will be absorbed by release of further government stocks.

It is expected that the sharp decline in stocks during the second quarter will be partially arrested during the third quarter, as there was a considerable tonnage of pig tin en route to the United States July 1. This tonnage represents purchases against first half allocations made available to this country by the Combined Tin Committee.

Stocks of concentrates at the government - owned smelter at Texas City, Tex., are now at about a working level, and for the remainder of this year production will be limited to intake of concentrate.

Imports of new tin during the second quarter amounted to 6581 tons, consisting of 6051 tons of tin in concentrate and 530 tons of pig tin. In addition, domestic production of pig tin from detinning tinplate scrap and used cans amounted to 675 tons, and receipts of tin alloy scrap totaled 5689 tons, making total available supplies during the quarter 12,945 tons.

During the same period consumption totaled 21,536 tons, compared with 22,780 tons during the first quarter and 21,418 tons in the corresponding quarter a year ago.

Significant during the quarter was the falling off in almost all categories of consumption, except tinplate. Sharp declines occurred in consumption of tin for copper base alloys, solder, and bearing metal, indicating that the peak of demand for these items within the limits imposed by controls has passed, and that pipelines have to a large extent been completed.

Weekly Gallup Polls . . .

Voters Favor Labor Unions and Support Right to Strike

Princeton, N. J.

• • • **Although this Labor Day** marked the beginning of a new era of union regulation under the Taft-Hartley Act, public opinion in this country continues to be overwhelmingly in favor of the union movement and in favor of the right of labor to strike, according to George Gallup, director American Institute of Public Opinion.

Because public sentiment favors specific controls over certain union practices such as featherbedding, financial accounting, the checkoff and the closed shop, it does not follow that the country is anti-union or even antistrike.

A coast-to-coast poll by the institute finds, on the contrary, that nearly two voters out of every three approve of labor unions and believe that workers should continue to have the right to strike if they want to. Only about one American in four wants to see all strikes prohibited.

These facts are brought out in answers to two questions put to a cross-section of Americans by the institute.

The first is as follows:

"In general, do you approve or disapprove of labor unions?"

Similar surveys have been conducted by the institute at periodic intervals beginning in 1937. The trend, with the latest figure included, follows:

	Approve Pct	Disapprove Pct	Undec. Pct
1937	72	20	8
1939	68	24	8
1940	64	22	14
1941	61	30	9
Today	64	25	11

Organized labor's main public relations problem is with farmers. In the current survey only 49 pct of the farmers polled say they approve of labor unions, whereas, among professional and businessmen, white collar and manual workers the figure is over 70 pct.

The Taft-Hartley Act places certain restrictions on striking and certain penalties for unauthorized walkouts, but does not deny the right to strike.

Public sentiment would not accept the abolishing of the right to strike in peacetime.

The second question in the survey asked:

"Should Congress pass a law forbidding strikes in all industries or should workers have the right to go on strike?"

The vote:

	Pct
Should forbid	28
Continue right to strike	62
No opinion	10

During wartime the public felt strongly that the right to strike should be severely restricted while the nation was in the throes of its struggle against Hitler and the Japanese. As early as 1941 the institute found 73 pct in favor of forbidding all strikes in war industries for the duration.

At the present time the greatest sentiment for outlawing strikes is found among farmers. Here is how the major occupational groups vote:

	Forbid Strikes Pct	Have Right Pct	Undec. Pct
Prof. & Bus.	26	67	7
Farmers	40	47	13
White collar	26	65	9
Manual workers	26	65	9

•

• • • **"Le Plan Marshall,"** as the French call it, has wide popular support throughout France. But some Frenchmen are suspicious of American motives in proposing the plan.

A poll by the French Institute of Public Opinion shows that nearly two-thirds of the French people think France was right to take part in discussions of the Marshall Plan, which is a plan for European self-recovery with American aid. Nearly half say that Russia was wrong in refusing to participate.

Representatives of 16 European nations are now sitting in Paris drawing up a consolidated "budget" of their economic needs. When this is completed and the total cost estimated, the United States has promised to study the requirements and see what it can do to help the needy nations with loans, shipments of machinery and goods, and other means.

Marshall Plan Has Popular Support in France Although Some Suspect Our Motives

o o o

Shortly after the Paris conference began, the French Institute questioned a cross-section of French voters on the following:

"Sixteen European nations are meeting in Paris to discuss the Marshall Plan. The following nations have refused to participate in the discussion—Albania, Bulgaria, Finland, Hungary, Poland, Romania, Czechoslovakia, Russia and Yugoslavia. Do you think that the Marshall Plan can succeed in spite of this?"

	Pct
Can succeed	46
Cannot	22
No opinion	32

"Do you believe that France was right or wrong to participate in discussions of the Marshall Plan?"

	Pct
Right	64
Wrong	8
No opinion	28

"In your opinion is the Marshall Plan any threat to the independence of France?"

	Pct
Yes	23
No	38
No opinion	39

"In your opinion was the proposal of Mr. Marshall dictated by:

	Pct
"(1) The desire of America to intervene in internal affairs of Europe	17
"(2) A sincere desire to aid Europe's recovery	18
"(3) The need to find external markets to avoid an economic crisis in the U. S."	47
No opinion	18

"Do you believe it is a good thing or a bad thing that Russia refused to participate in discussions of the Marshall Plan?"

	Pct
Good thing	27
Bad thing	43
No opinion	30

"Do you believe Russia was right or wrong in refusing to participate?"

	Pct
Right	18
Wrong	47
No opinion	35

French Industry Is Still Under Rigid Government Control

Paris

• • • **An Order of** the French Ministry of Industrial Production has revised the rules established by the Comite d'Organisation de la Siderurgie, the Office Professionnel de la Siderurgie and fixed the powers of the iron and steel control (Direction de la Siderurgie or Steel Dept. of the Ministry of Industrial Production) on the French iron and steel industry.

Whereas claims for more freedom from government controls are frequently heard in France, it is generally recognized that in the present circumstances this measure is still not possible for the basic steel industry. However, it was expected that some of the controls imposed during the war and maintained after the liberation could be suspended in order to give more freedom to the industry.

In the order of the Ministry of Industrial Production almost at each line the words "control of the Direction de la Siderurgie, "or" agreement of the Direction de la Siderurgie" appears. For example, in establishing an advance of prices of steel products, rules for uniform method of calculation of the costs are fixed by the Chambre Syndicale de la Siderurgie, in "agreement" with the government director of steel. The director of steel will act as "Government Commissaire" for the Iron & Steel Research Institute. The official standards established by the *Bureau de Normalisation de la Siderurgie* are "compulsory" for all works. Apprenticeship in the iron and steel industry is "controlled" by the director of the steel. For certain manufacturing factories must have "authorization" before starting production.

As far as the production program is concerned, it is established by the Chambre Syndicale de la Siderurgie. It must, says the Order, secure rational utilization of the mills, of the manpower and raw material available and satisfy in quantity and quality the demand for iron and steel products. Works are "compelled" to furnish to the Chambre Syndicale de la Siderurgie all the information necessary to this end.

In France, for heavy steel products the Comptoir des Produits Siderurgiques, acts as central organization for the sale of iron and steel products. The new order provided that the comptoir must take care that the orders and deliveries of iron and steel products conform to the decisions of the public authorities and of the administration in charge of production and of allocations. The comptoir has to distribute orders between the works, according to the production program fixed by the Chambre Syndicale de la Siderurgie.

The comptoir must control the execution of orders and deliveries. Works are "compelled" to be members of the comptoir and to follow its rules for establishments of invoices, cashing, conditions of transport, deliveries. The comptoir retains the funds from the sales, the amount provided for central operating costs.

If the sales of the iron and steel products are centralized so is the industrial supply of coal, by the means of another government body (ORCIS). All the works which consume more than 100 metric tons of coal per month must be a member of the ORCIS, which is "controlled" by the steel directors.

Sales of Thomas slag is also centralized by the Societe Nationale pour la vente des scories Thomas (SNST), which is "controlled" by the Direction of the Siderurgie.

No company is allowed to relight a blast furnace without previous authorization of the Chambre Syndicale de la Siderurgie, given after agreement with the government.

Agreement of the steel director is also necessary after proposal of the Chambre Syndicale de la Siderurgie and advice of the Assn. Technique de la Siderurgie, for all new construction of steel plants or modernization of existing plants, except if the work amounts to less than $80,000.

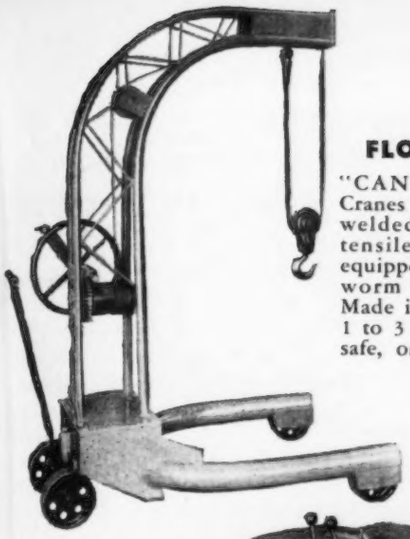
Though the French iron and steel industry is still far from being nationalized, it has submitted to a very far reaching control which leaves only small limits of initiative to the industrialist. Many of them are of the opinion that if more freedom were given to them, as it was after the World War I, things would go much better. However, raw material supplies depend so much on decisions at the international level that circumstances are not quite comparable.

During a debate at the French National Assembly which adopted a bill extending to Mar. 31, 1948 the rules in force for the allocations system of industrial products, the Minister of Industrial Production, Mr. Lacoste, underlined that the insufficiency of the French resources of energy and the scarcity of raw material compelled "without discussion" the maintaining of allocations in the basic industries. As far as finished products are concerned, controls have been lifted for some of them, but this measure can not be applied for all products, as it would result in an increase of prices. As Assembly members observed that the present system of allocations presents many defects, the Minister promised that a bill would be presented to improve the system.

The subsidies to the French iron and steel industry have been continued to cover its losses, because insufficient selling prices have been maintained and a credit of $60,432,000 has been provided to this end in the budget of 1947. In course of the debate before the Republic Council amendment to kill the subsidies was proposed, but finally this amendment was rejected.

The prices of the French iron and steel industry have been controlled by the government since 1936 and the average earning in the period 1930-1939 was only about 1.7 pct of the capital invested. Annual amortization for the plants did not exceed 1.8 pct. Only two or three works, that is the Nord & Est Steelworks have been able to distribute dividends.

Speaking in favor of killing of the subsidies, the author of the amendment underlined that in the present system the mills are unable to find the sums of money necessary for their modernization and equipment plans and that the system of subsidies does not encourage individual works to make special efforts, as all works receive the same subsidies. Killing the subsidies would mean an increase of about $8 per metric ton of steel. But as steel products represent only about 20 to 25 pct of the prices of manufactured product in steel or engineering products, the advance which would be of 13 pct on the present prices of steel, would increase the costs of manufactured products or engineering products by only 3 or 4 pct, which is not much in comparison to the necessity of putting the iron and steel industry on a sound basis.



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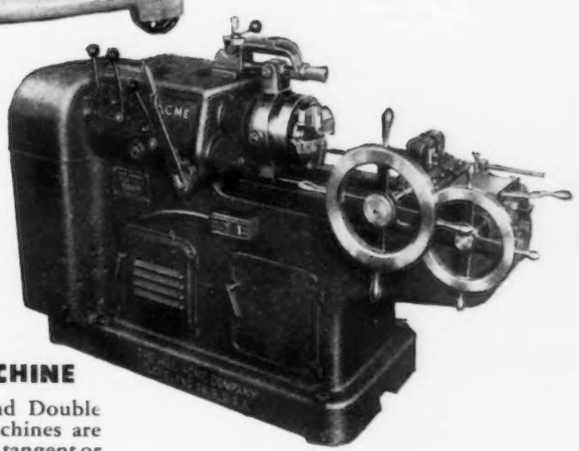
"CANTON" Portable Cranes are constructed of welded steel, with high tensile drop forgings; equipped with self locking worm as safety feature. Made in eight sizes from 1 to 3 ton capacity. Fast, safe, one-man operation.

ALLIGATOR SHEAR

"CANTON" Alligator Shears are the most rugged, powerful and trouble free shears ever built for processing scrap. Modern design has produced a stronger shear, with fewer parts, and positive lubrication. Made in a full range of sizes to meet every condition.



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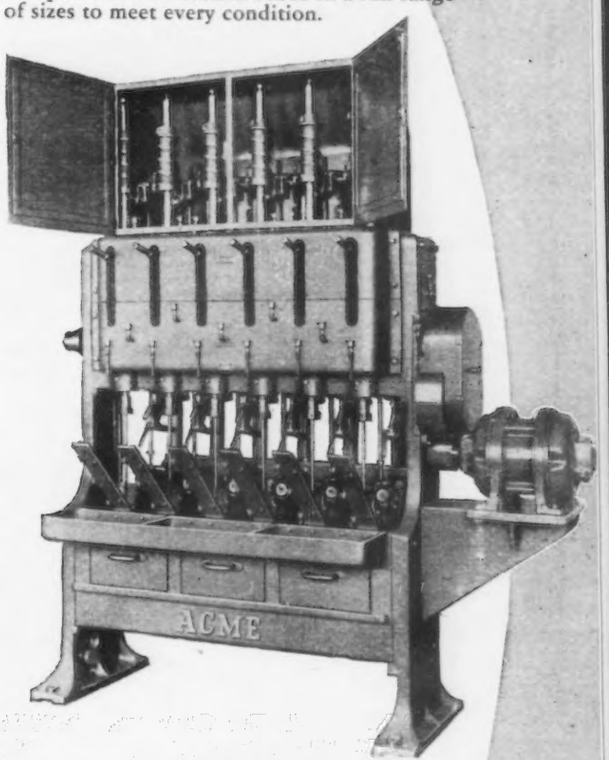
"ACME" XL Single and Double Spindle Threading Machines are equipped with patented tangent or hob type die head which assures economical, accurate, high speed production. Furnished in sizes from 1" to 3" capacity.



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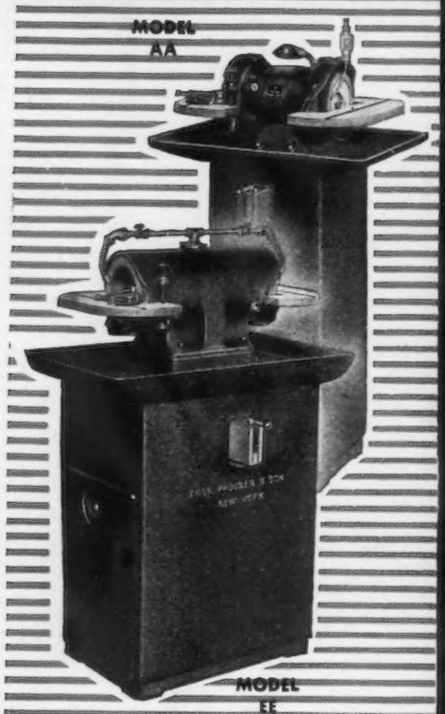

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Super Metals Are On Way For Turbo-Jets, Rockets, Battelle Chief Declares

Salt Lake City

• • • **A new group of "super metals"** and ceramics soon will be available for man's new high-powered machines, the turbo-jet, rocket and atomic energy power plants, Clyde E. Williams, director of Battelle Memorial Institute, Columbus, O., told The American Society of Mechanical Engineers at its fall meeting here recently. They will withstand higher temperatures and pressures than materials now available, he said, and so will offer potentialities for power generation that are "simply staggering."

The present program to develop new and revolutionary forms of power generation and transportation for purposes of national defense, spearheaded by the Army and Navy, "will keep America safe from attack by an aggressor nation and contribute to strengthening national economy," Dr. Williams declared. It will constitute a great force for world peace by "giving America the strength and confidence she needs to maintain the peace."

Dr. Williams spoke at a dinner highlighting the 4-day technical program of the ASME, at the Hotel Utah. Co-sponsor of the dinner was the American Institute of Mining and Metallurgical Engineers, of which he is national president. His subject was: "Materials and Power."

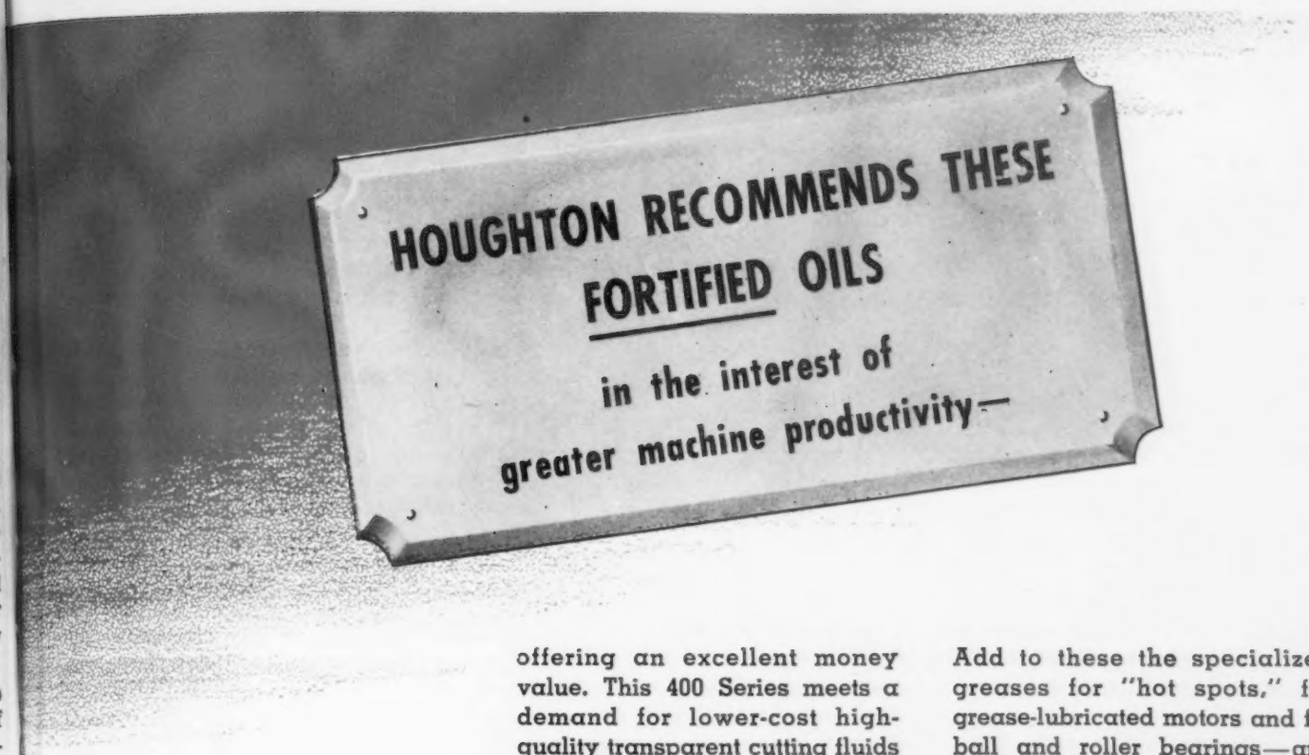
Praising the design engineers and materials research scientists whose combined efforts made possible tremendous strides in power generation preceding and during the war, he challenged them to meet the ever increasing demand for stronger and more heat-resistant materials.

The gas turbine would not have been possible without the highly alloyed materials developed in the past 5 or 10 years. Materials had to be developed to withstand high stresses and temperatures up to 1500°F, Dr. Williams said.

"Now engineers are pushing upward beyond this figure and are asking for materials to withstand 1600°F and stresses as high as 20,000 psi.

"When war demands required

(CONTINUED ON PAGE 246)



TODAY'S great need is for greater productivity—only possible if men use modern machines to increase output. To make those machines function most efficiently for long periods without break-down, these Houghton oils are presented for your investigation and use:

CUT-MAX CUTTING OILS

Four new series to meet every need: the 100 Series for non-ferrous machining . . . the 200 Series, fortified with active sulphur and film-strength additive, for heavier duty machining . . . the 300 Series, sulphurized, high in saponifiable content but not chlorinated, assuring bright, untarnished surfaces . . . and last but not least, a brand-new 400 Series: light-colored clear oils mildly but effectively treated, and offering an excellent money value. This 400 Series meets a demand for lower-cost high-quality transparent cutting fluids for automatics and high production jobs where feeds are light and speeds high.

SOLUBLE CUTTING OILS

Where water-soluble oils are desired, we offer *Antisep* Soluble Oil, combining unusual antiseptic and cleansing properties with the traditional factors of fine finish and longer tool life.

MACHINE LUBRICANTS

Well known to plant men is the STA-PUT line of industrial oils, treated to provide unusual resistance to leakage, and to increase the load-carrying capacity. Ways, slides, motors, gears, etc., function smoothly when they're Sta-Put lubricated.

High speed spindles run faster with less wear when they're oiled with Kensington Spindle Oil, treated to give increased film strength.

Add to these the specialized greases for "hot spots," for grease-lubricated motors and for ball and roller bearings—and you have a complete lubrication line, backed by a personalized service. That service extends into the plant, where requested, to help set up an error-proof, workable lubrication plan. Its net result is "Less Oil—Less Often."

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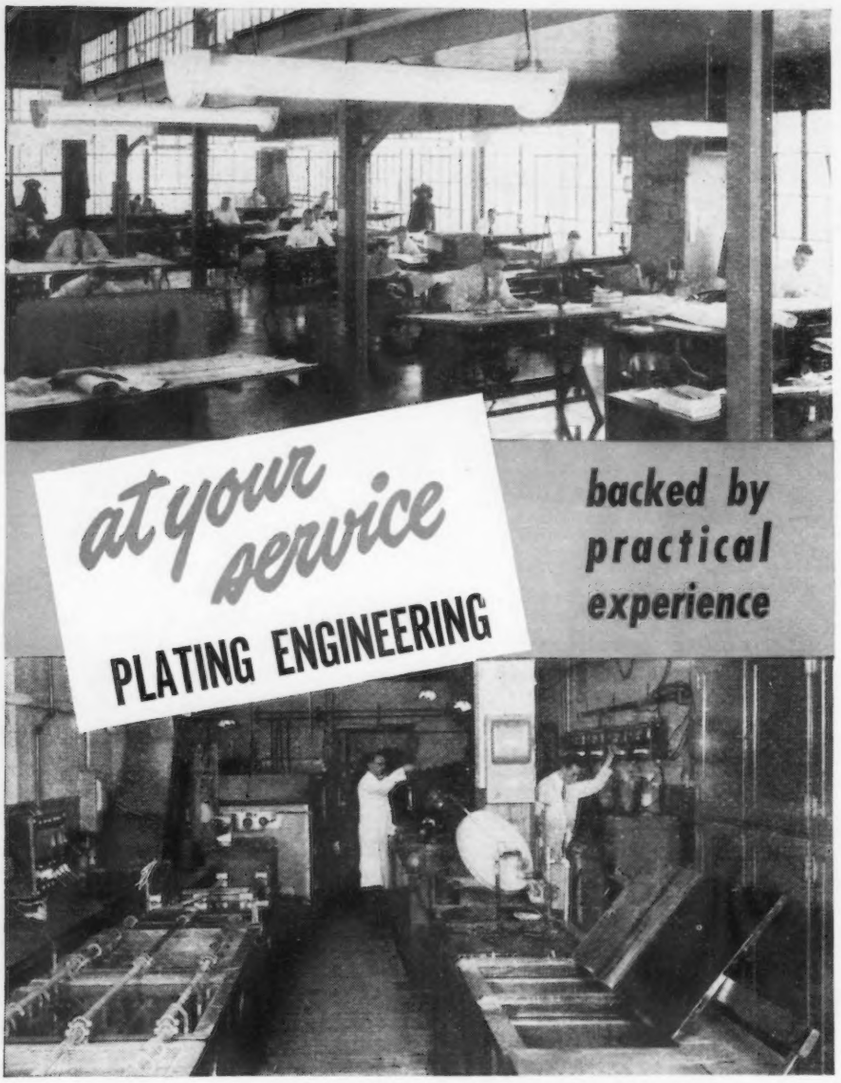

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REPRESENTED IN PRINCIPAL CITIES

NEWS OF INDUSTRY

(CONTINUED FROM PAGE 240)

the rapid development of alloys for gas turbine parts, we were ready. Thanks to the skill of the design engineer and to the success of the metallurgist, the aircraft industry was able to supply the superchargers for the engines of high altitude fighters and bombers and the gas turbines for our jet planes.

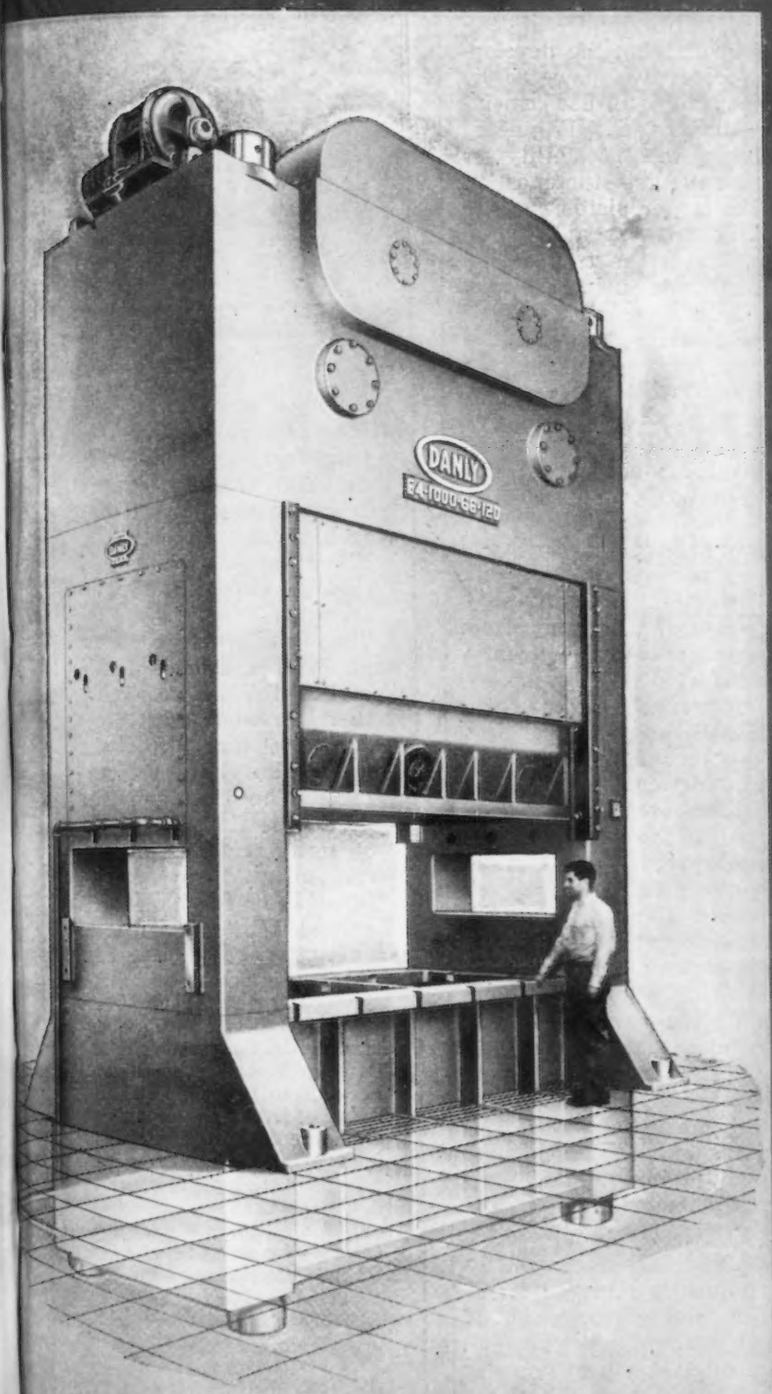
"**For the supercharger,** disk materials must withstand a temperature of 1100°F under high stress. For this purpose, chromium-nickel-cobalt-iron alloy strengthened with such other elements as molybdenum, tungsten, columbium or titanium is used. The alloy used for disks contains 16 pct chromium, 25 pct nickel, and 6 pct molybdenum, balance iron. The gas turbine blades used in superchargers and jet engines are subjected to temperatures of 1500 to 1600° and the metal sometimes reaches a temperature of 1500°F. To secure stability, still more highly alloyed materials must be used and some are practically iron free. The strongest materials suitable for precision casting are the cobalt-base alloys containing 40 to 70 pct cobalt and such other additions as chromium and molybdenum or chromium, nickel, molybdenum, tungsten and columbium.

"Another series of alloys, based on chromium, with upwards of 50 pct of this metal, is showing great promise. An example is one that contains 60 pct chromium, 15 to 25 pct molybdenum, balance iron. This alloy must be melted and cast in a vacuum. In preliminary tests it shows up better than the cobalt-base alloys and gives promise of permitting safe use of still higher stresses. There is much hope also that other alloys will be forthcoming that will have better properties than the present ones. Those metals offering promise besides chromium are titanium, columbium, tantalum, molybdenum and tungsten.

"**The gas turbine** has met with so much success in aircraft, and the opportunity for securing metals to withstand high temperatures for long periods of time is so promising, that this means of power generation will be extended to numerous other fields. Gas turbines to swing aircraft propellers are under development. Three gas turbines for ship propulsion are under construction for the Navy and the Maritime Commission.

(CONTINUED ON PAGE 250)

Greater Stamping Production Depends on Less "Downtime" in Press Operation



DANLY 1000-ton 4-Point Straight-Side Press

Leaders in the automotive, farm implement, electric appliance and general manufacturing fields, know that dependable, *continuous press operation* is necessary for volume stamping production.

To meet this requirement, the Danly Press is designed with a maximum safety factor wherever stress occurs. Frame construction, gearing, slide suspension, lubrication, clutch and brake assembly are designed for long life in capacity operation. Every feature of the assembly is designed for rapid maintenance and easy accessibility.

Machined to rigidly-held tolerances and properly aligned in assembly, the Danly Press in operation makes for faster runs, accurate stampings, burr-free parts and longer die life.

The Danly Pressure Oil Spray Lubrication System pipes clean filtered oil directly to each gear and driving member in the crown and slide. This system provides a clean, fresh oil supply that does not require daily attention.

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Danly's Press Division will be glad to furnish more detailed information on any one of the presses shown here.

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S

(CONTINUED ON PAGE 246)

Stationary power generation units run by gas turbines of 5000 to 10,000 hp are in the planning stage. The gas turbine may be expected to compete with the diesel in railway transportation since it offers similar advantages. A group of railway and coal companies is sponsoring the development of locomotives powered by gas turbines that will use coal instead of oil as fuel. Engineers are studying the possibility of utilizing small gas turbines in place of the larger piston engines for the larger trucks and buses.

"Judging from the tremendous advancement made during the war, using the present status of materials and power as a basis, the possibilities for the future are simply staggering."

The speed record recently set by a modified P-80 jet plane of 623.8 mph pushes closely on the speed of sound (760 mph at sea level) Dr. Williams pointed out.

Promising as is the development of turbo-jet powered devices, increasing attention is being paid to rocket propulsion. Alreay used in jet-assisted take-off, it is now being used for airborne vehicles designed to travel faster than sound. "Since the rocket engine does not rely on the oxygen of the atmosphere for combustion — as does the turbo-jet-engine—it can be designed to pass above the earth's atmosphere, and if sufficient force can be developed to generate speeds above 25,000 mph, rocket propulsion offers the promise of vehicles of one sort or another that will escape from the attraction of the earth's gravity and so travel through space."

In the use of atomic energy, practical work is under way involving the generation of steam and electrical power in stationary plants, Dr. Williams pointed out, but many problems remain to be solved by the engineer.

"Radioactive fission products must be frequently removed from the uranium and plutonium and the nuclear reactor must be enclosed in a thick shield to protect personnel from harmful radiation.

"This makes the problem of atomic propulsion of any vehicle a most difficult one, that of ship propulsion being the least difficult because of the possibility of utilizing water as a protective shield."

Schemes for the development of

Preparing Aluminum For Finishing?

IF so, you'll want to make sure that surfaces are in ideal condition for firm anchorage of paint, lacquer, enamel or other organic finishes. Oakite Compound No. 36 fills that surface-conditioning requirement perfectly.

This mildly acidic, liquid material microscopically etches the surface . . . then forms a thin, inert adherent film of aluminum phosphate on surfaces. The film deposited by Oakite Compound No. 36 not only retards corrosion but provides an ideal base for tenacious grippage of the organic finish.

IN-PLANT HELP FREE

Your local Oakite Technical Service Representative will be glad to give you all the details for the use of Oakite Compound No. 36 right in your plant. Or, if you prefer, send today for special field service report which outlines all methods for surface preparation with Oakite Compound No. 36. Both services, YOURS FREE.

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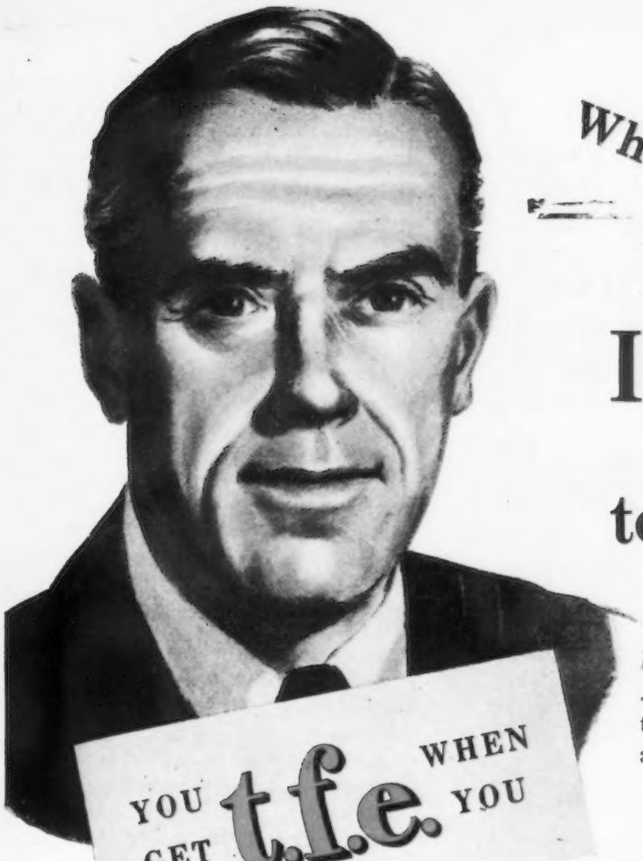
Specialized Industrial Cleaning
MATERIALS • METHODS • SERVICE



What do Fasteners Really Cost?

There's more to fastener cost than just price. Lots more. Personally . . .

I look for all 8 to get t.f.e.

True Fastener Economy

It is the many costs of using a fastener that count . . . not just the initial price. *True Fastener Economy* is the lowest *total* cost for fastener selection, purchase, assembly and performance.

1. Reduce assembly time to a minimum by savings through use of accurate and uniform fasteners

2. Make your men happier by giving them fasteners that make their work easier

3. Reduce need for thorough plant inspection, due to confidence in supplier's quality control

4. Reduce the number and size of fasteners by proper design

5. Purchase maximum holding power per dollar of initial cost, by specifying correct type and size of fasteners

6. Simplify inventories by standardizing on fewer types and sizes of fasteners

7. Save purchasing time by buying larger quantities from one supplier's complete line

8. Contribute to sales value of final product by using fasteners with a reputation for dependability and finish

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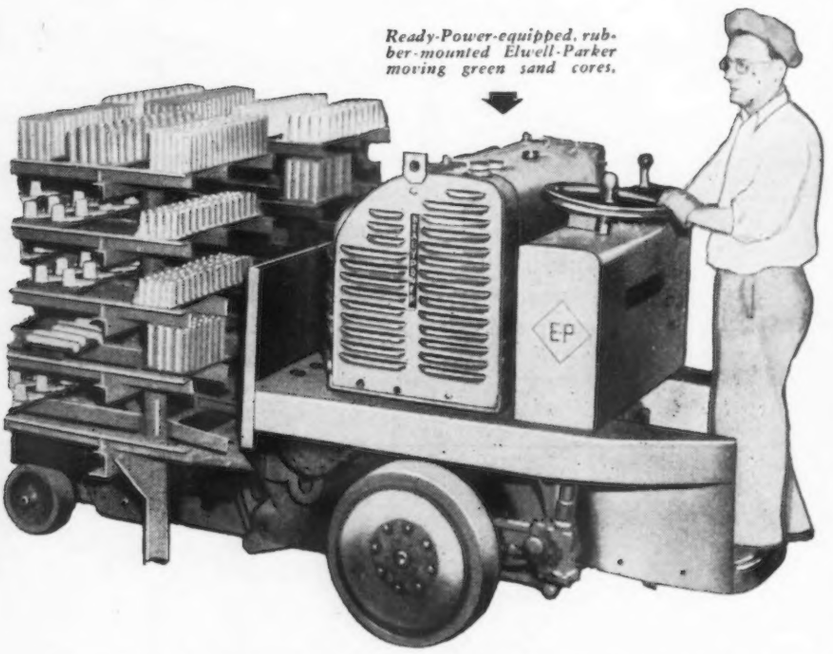
102 years making strong
the things that make America strong

Plants at Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at Philadelphia, Detroit, Chicago, Chattanooga, Portland, Seattle. Distributors from coast to coast. By ordering through your distributor, you can get prompt service for your normal needs from his stocks. *Also*—the industry's most complete, easiest-to-use catalog.

READY-POWER for smooth operation



Ready-Power-equipped, rubber-mounted Elwell-Parker moving green sand cores.

If it's smooth, electric truck operation you want, there's nothing better than Ready-Power gas-electric Power Units. Ready-Power offers *more* than regular electric truck operation because dependable electric current is generated right on the truck chassis in unlimited amounts. That means your trucks are always ready to operate at top speed . . . 'round the clock if necessary. Install Ready-Power Units on any make electric truck. Write for details.

Ready-Power-equipped Mercury truck loading an annealing oven.

THE READY-POWER CO.

3822 Grand River Ave., Detroit 8, Michigan

rocket and atomic energy space ships may be considered in the realm of "interesting speculation," the Battelle director said.

"Besides involving the ultimate skill in design of the engine, steering devices — and other controls, their success depends on our ability to find materials of construction to withstand temperatures hitherto considered beyond the range of engineering materials.

"Again skillful design can permit lower maximum temperatures. Without cooling, temperatures as high as 5000°F may be reached in the engine.

Use of Ceramics Foreseen

"The high-temperature 'super metals' developed for the gas turbines and improvements on these yet to come will be useful, but to meet the highest temperatures these will not suffice and ceramic materials will be called for. These ceramic materials made up from the most highly refractory substances such as oxides of beryllium, aluminum, magnesium, zirconium, and so on, are the only known materials that will not melt or burn up at such temperatures. They may be used as coatings for metals, as structural combinations with metals, or as individual parts. One difficulty involving the use of ceramic materials is their relatively poor mechanical properties compared with metals. These must be improved or compensated for by design. Such materials, because of the high degree of useful work they will perform and owing to their unusual properties, may command a high unit price compared with customary constructional materials."

264,000 Cars Built

Detroit

• • • **Based on returns** from 28 states, R. L. Polk & Co., Detroit, statisticians for the automotive industry, estimate new passenger car registrations for July should reach 264,000. July truck sales are expected to be 58,000 on the basis of returns from 26 states for the month of July.

Based on registration figures, sales of new passenger cars are currently running at approximately three times that of 1946 and new trucks approximately twice that of 1946.

Says Big Piston Type Aircraft Engines Are Doomed by Gas Turbines

Mexico City

• • • **Dr. John T. Rettaliata,** head of the mechanical engineering department at Illinois Institute of Technology, Chicago, forecasts an early end for the high-powered aviation piston engine, both for military and commercial use.

In an address before the Mexico City section of the American Institute of Electrical Engineers, Dr. Rettaliata predicted that the gas turbine will be well entrenched within 5 years in the high-speed large commercial transport field, and within 10 years its supplanting of piston engines for this use should be essentially complete.

"Already the gas turbine-jet propulsion combination (turbo-jet) has replaced the piston engine-propeller arrangement in the latest high speed subsonic military fighter planes," he told an international audience. "The most recent bombers are also employing engines of the turbo-jet type."

While its use will be restricted, the propeller will not disappear with the piston engine, according to Dr. Rettaliata.

"Gas turbines driving propellers (turbo-prop units) through reduction gears are the best type of aircraft power plant for moderate subsonic speeds," he said.

As flight speed is reduced, the propulsion efficiency of jet engines decreases; whereas propeller efficiency is maximum at moderate speeds and falls off at high speeds, the gas turbine expert explained.

For speeds up to about 550 mph, propellers in their present state will probably have predominant application. Even with further development, however, they will not be used on supersonic planes.

In supersonic speed ranges, three types of power plants for propulsion of aircraft are applicable:

(1) Turbo-ram-jet engines—where additional fuel is burned in the tail pipe of a turbo-jet to increase the velocity of exhaust gas and hence increase thrust.

(2) Ram-jet engines—composed of a simple duct, the forward end of which consists of a diffuser to slow down the high velocity of incoming air and increase its pressure, with the air next passing

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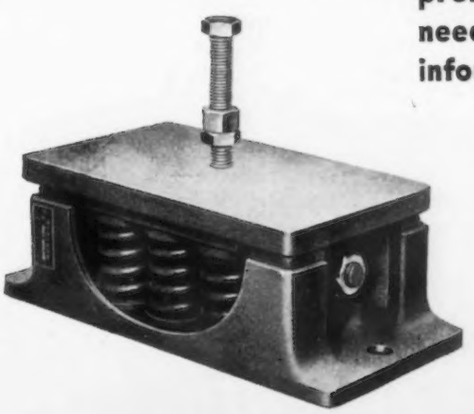
Vibration represents part of the productive power of a machine escaping through the foundation on which it rests, and the result is decreased production efficiency.

Through the application of a Korfund *Engineered* Vibration Control System, the energy lost through vibration can be saved for productive uses.

Korfund Steel Spring Isolators also save wear and tear on the machine, enable efficient production line arrangement and reduce noise and vibration within a building. Korfund Vibration Control Engineering applies the skill of years of experience in solving vibration problems to your immediate needs. Write for complete information.



Korfund Type LK Vibro-Isolator shown at left is of steel spring construction with resilient chocks at the corners to act as stabilizers. These inserts can be adjusted to the correct damping for the individual installation.

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Typical of installations is the H-P-M Metal Working Press at the Buckeye Aluminum Company, Wooster, Ohio.

Top-speed cooking utensil production from ALL types of metal . . .

Revere, Ecko, Hot Point, Buckeye . . . such famous names as these know the value of H-P-M Fastraverse Presses for fast, precision cooking ware manufacture. And they know that H-P-M Presses play no favorites for high-speed production for *any* metal—aluminum, steel for enamelware or stainless steel. That's why you'll find so many H-P-M installations in operation today—not only for making cooking utensils—but for *every* metal working job. Faster operation—less scrap—deep draw in a single operation—these advantages make H-P-M Presses "standouts" in the metal working field.

To Solve *Your* Pressing Problem—Versatile design of H-P-M Presses makes them adaptable to the exact spot in your production line where they can do the job you want—equipped with hydraulic blankholder and die cushion—high-speed performance for both shallow and deep sheet metal draw work. And there's only one company to look to for responsibility for press performance. H-P-M designs and builds all hydraulic units in each press . . . pumps, valves, controls.

No matter what your metal working problem—or what type of metal you're using—there's an H-P-M Press to do the job—better and at low cost. Our engineers can recommend the right press for your metal working job.

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REVOLUTIONIZING PRODUCTION WITH HYDRAULICS SINCE 1877

through a heating chamber, and finally expanding through a rear-duct nozzle and being emitted at high velocity to produce a thrust.

(3) Rocket engines — carrying their own self-contained fuel and oxygen and, therefore, independent of the earth's atmosphere.

"At supersonic speeds an airplane with a ram-jet engine would have the longest range, but it would have to be launched by some other means since the ram-jet is not self-starting.

"The next longest range could be obtained with a turbo-ram-jet engine, which has an additional advantage of producing a static thrust for take-off.

"The rocket engine will have the shortest range, but will give the greatest thrust per unit weight."

This later feature, he explained, is the reason present attempts to break the sonic barrier are being made with planes employing rocket propulsion.

Turning to the personal plane field, Dr. Rettaliata told the engineers the low-power piston engine with propeller can expect a long life.

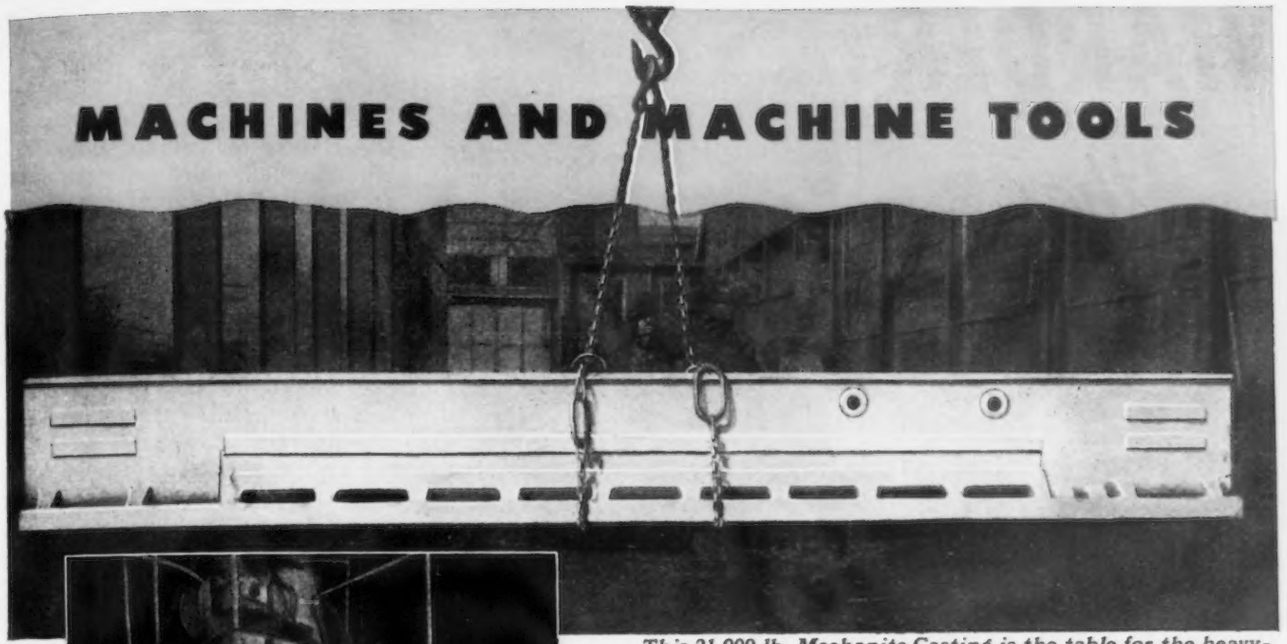
"Notwithstanding some predictions to the contrary," he said, "the personal plane will not be jet-propelled. Nor does it appear likely that gas turbines driving propellers will be used as power plants for personal planes in the forseeable future. The small sizes make fuel consumption prohibitive."

A compound engine, consisting of a piston engine whose exhaust gas is supplied to a gas turbine and the power from both furnished to a propeller, has some attractive possibilities for the future.

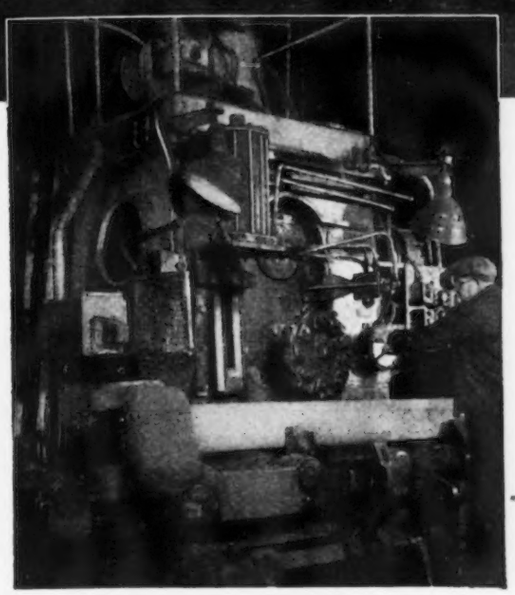
"A power plant of this type," he pointed out, "will give the longest range at low flight speeds."

"It might be thought, therefore, that such an arrangement would perpetuate the use of the high-power piston engine and prevent its predicted replacement. But such is not the case.

"Based on the developmental difficulties experienced with such engines, their commercial application appears to be of doubtful fruition. And the prophecy of the ultimate superseding of high-power piston engines by gas turbines is believed valid."



This 21,000 lb. Meehanite Casting is the table for the heavy-duty Billeteer, a quality component of a precision machine.



Bonnot Company Billeteer in action.

Built for Action
WITH MEEHANITE® CASTINGS

A Billeteer, like all machine tools, must be "built for action." So described by its builder, The Bonnot Company, Canton, Ohio, the Billeteer illustrated is a precision machine in every respect and is well known in the steel industry for its accomplishments in chipping steel billets.

The 21,000 lb. Billeteer table shown is a MEEHANITE casting in keeping with the high quality standards of the builder. As a MEEHANITE casting the table is assured of providing the necessary high strength, better vibration absorption, dimensional stability and density required of such precision machinery castings.

In the machine tool industry many leading manufacturers are familiar with and make extensive use of the *better* properties provided by MEEHANITE castings.

For further information write for our booklet on MEEHANITE machine tool castings.

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Builders Iron Foundry Inc.	Providence, R. I.
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Continental Gin Co.	Birmingham, Alabama
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Farrel-Birmingham Co., Inc.	Ansonia, Connecticut
Florence Pipe Foundry & Machine Co.	Florence, New Jersey
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General Foundry & Manufacturing Co.	Flint, Michigan
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Kanawha Manufacturing Co.	Charleston, West Virginia
Kochring Co.	Milwaukee, Wisconsin
Johnstown Foundries, Inc.	Grove City, Pennsylvania
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We don't recommend it, but it just goes to show that Eclipse Guns with their internal nozzles are built to stand up under abuse that would send other guns to the repair shop.

This ruggedness plus the Eclipse Low Pressure Principle gives you more speed, better gloss, with material and power savings—an unbeatable combination.

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ECLIPSE

Keystone Reports Net Profit Increase Of 129 Pct Over 1946

Peoria, Ill.

• • • **In the annual** report to stockholders issued for the fiscal year ended June 30, 1947, Keystone Steel & Wire Co. reports net profit of $4,837,955 after all charges and federal taxes, an increase of 129 pct over net profit of $2,109,951 for the previous fiscal year. This is equivalent to $7.74 a share on 625,000 shares of capital stock now outstanding, compared with $3.37 a share on the same basis for the previous fiscal year.

Keystone produced 286,633 net tons of steel in the last fiscal year compared with the previous year's total of 277,423 tons while shipments of 267,935 compared with 248,567 net tons for the preceding year, according to Reuben E. Sommer, president of the company. Sales of $27,967,083 compared with sales of $20,429,336 for the previous year, a gain of 37 pct.

In order to keep Keystone's present finished product departments running at capacity, the company has contracted with an independent steel producer for the production of the additional quantities of steel the company needs in excess of its own production, which has been limited to its inability to obtain the proper grades of steel scrap in the necessary quantities. Consequently, further expansion of finishing capacity must depend on steel purchased from other producers. Pig iron also continues in short supply.

Screw Machine Setup Is Largest in West

Torrance, Calif.

• • • **The Harvey Aluminum** & Brass Div. of Harvey Machine Co., Inc., has announced, through Mr. Lawrence Harvey, executive vice-president, that they have installed one of the largest banks of automotive screw machines west of the Mississippi River. Complete facilities for the manufacture of aluminum and brass products—from smelter to finished product, are available in the Torrance, Calif., aluminum plant of the Harvey Machine Co.

The company has also released the Harvey Aluminum Data Design Manual, which contains data for standard aluminum extrusions. Of particular interest, to designers and manufacturers of aluminum products, is complete information regarding tolerances, conditions of heat-treat, nominal composition and typical properties of raw aluminum alloys and coefficients of thermal expansion. Also included are tables showing typical tensile properties at elevated temperatures and mechanical property specifications.

Also available, separately, is a Harvey chart indicating the typical properties and machinabilities of all the various extruded aluminum alloys—as compared with free machining brass and steel.

Requests for copies should be made to Lawrence A. Harvey, executive vice-president, Harvey Machine Co., 19200 S. Western Ave., Torrance, Calif.

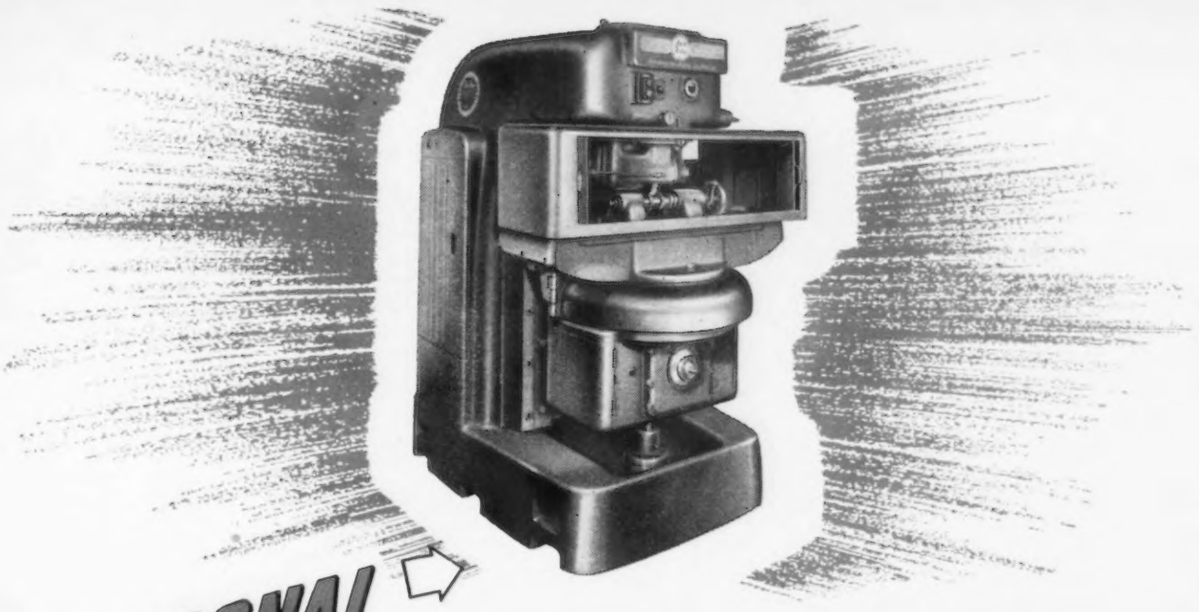
Mr. Harvey states that there will be no increase in prices by his company for aluminum extruded and special shapes for the third quarter of the year.

Hotpoint Buys A.C. Plant

Chicago

• • • **James J. Nance,** president, Hotpoint, Inc., has confirmed that his company purchased the war surplus Allis-Chalmers plant, Milwaukee, from the War Assets Administration where facilities will be installed to manufacture electric water heaters, automatic dishwashers, sink tops and cabinets with first operations scheduled for December 1947.

Pending final certification of the transaction, Hotpoint, a General Electric affiliate, will start immediately retooling for the production of automatic electric water heaters and automatic dishwashers that will employ more than 2000 employees when full conversion is completed. Meanwhile, an additional building, 100 x 500 ft, will be added to provide a high bay area to house large presses. With the added area the entire floor space will be approximately 500,000 sq ft.



A DIAGONAL GEAR SHAVING MACHINE FOR HIGH PRODUCTION

The new Red Ring Model GCU Diagonal Shaving Machine has been developed especially for mass production. While the principle of Rotary Crossed Axes shaving which has proved itself over the years is retained, an entirely new method of its application provides a number of advantages in production operations. Some of these are:

1. Greater stock removal on each cutting stroke.
2. Reduced time for each cutting cycle.
3. Complete cutting cycle just two passes under cutter.
4. Cutter life materially extended.
5. Cutter cost greatly reduced in many cases.
6. No special cutters required.
7. Better control of lead angle on helicals.
8. Operator fatigue reduced.
9. Oversize gears automatically screened out.
10. Operator's haste cannot jeopardize tooth surfaces.
11. Amount of crown on Elliptiod teeth can be varied.

For full details write for bulletin.

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Hour after hour, the Crescent PALLETIER lifts, totes, tiers, climbs ramps, speeds loading and unloading ... shrinks handling time and costs.

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ELECTRIC
PALLETIER
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Steel Trade Group In Belgium Taking Rerollers Into Fold

Paris

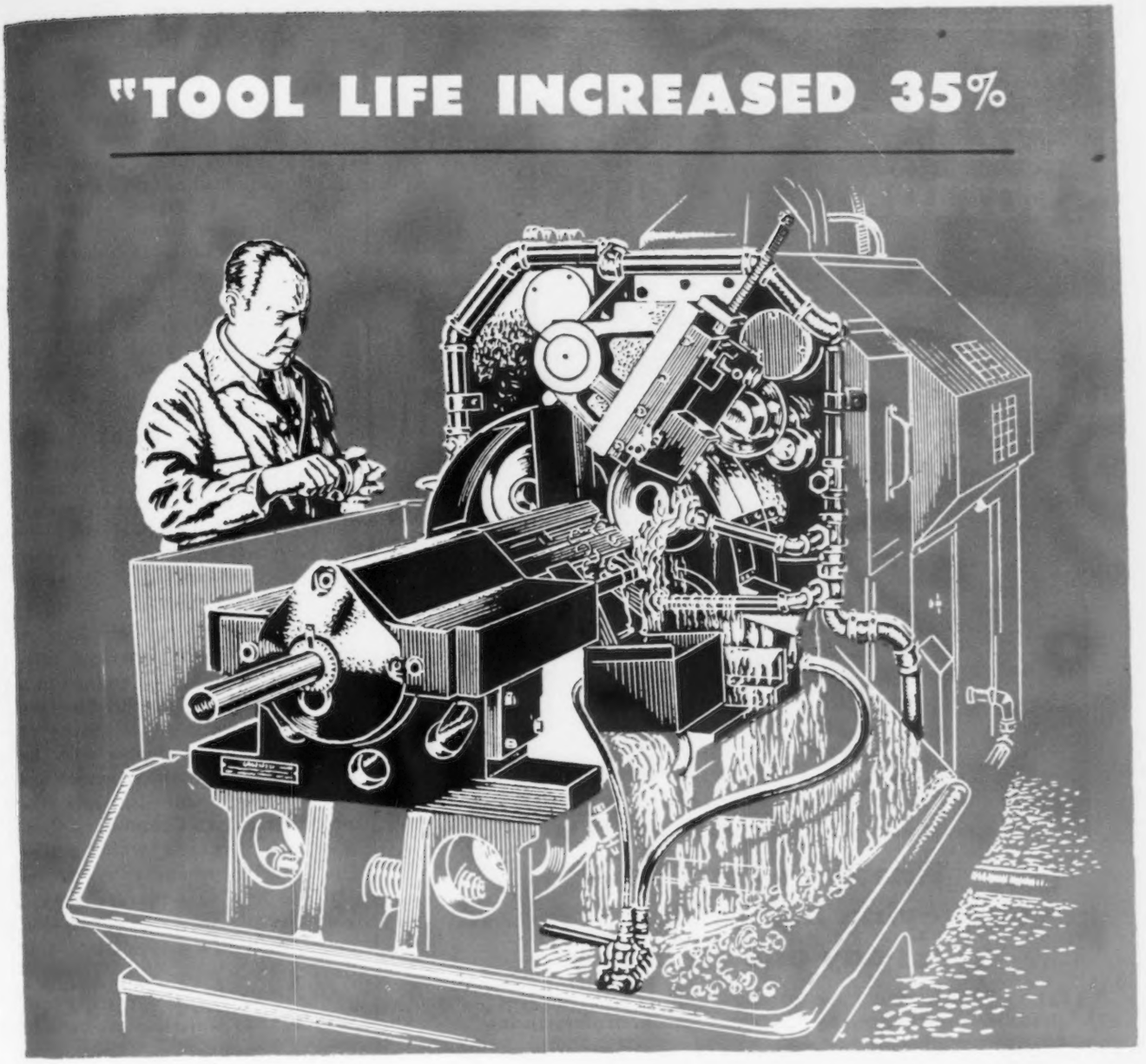
• • • **The Professional Council** of the Belgian Iron and Steel Industry created during the war was replaced June 30, 1946, by the Transitory Committee of the Belgian Iron and Steel Industry, which included producers of iron and steel as well as rerollers. Discussions are now under way to establish a central board of the Belgian iron and steel industry under the name Federation of Belgian Iron and Steel Industry *(Federation de la Siderurgie Belge)* with membership of the Blast Furnaces and Steelworks Assn. (*Groupement des Hauts founreaux et Acieries belges)*, the commercial organization of SIBELAC (which would be renamed COSIBEL — *Comptoir de vente de la Siderurgie Belge*), the syndicate of rerollers *(Transformateurs de Fer et de l'Acier)* and with as advisory members Fabrimetal, representing the engineering industries, and some commercial and metallurgical organizations. Functions assumed by the Transitory Committee would be passed on to the new Federation.

The signs that the insurgent Belgian rerollers are at last being drawn into the Belgian domestic cartel indicate the end of decades of long struggle to draw these independents into line. During prewar years, activities af the rerollers were a constant source of worry to Cosibel, and frequently caused some embarassment.

This plan is considered as urgent in order to coordinate modernization plans and to strengthen the Belgian steel industry in the international export market. Though no general modernization plan has been published in Belgium, as in the case of Great Britain or in France, it is known that individual plans are proceeding and some already partly completed. But in order to coordinate all production programs and "avoid unreasonable competition" between the works, the Blast Furnace and Steelworks Assn. has asked all its members to submit their plans for extension.

Among the new plants which will be put into operation in the near future, are: A new blast

"TOOL LIFE INCREASED 35%



. . . when we switched to Tycol No. 675"

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INDUSTRIAL LUBRICANTS

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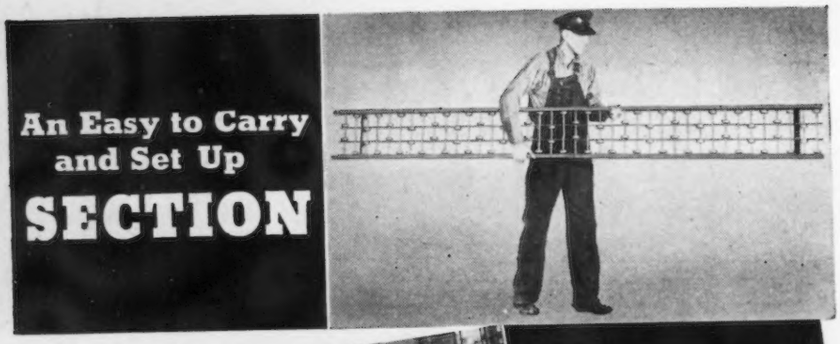
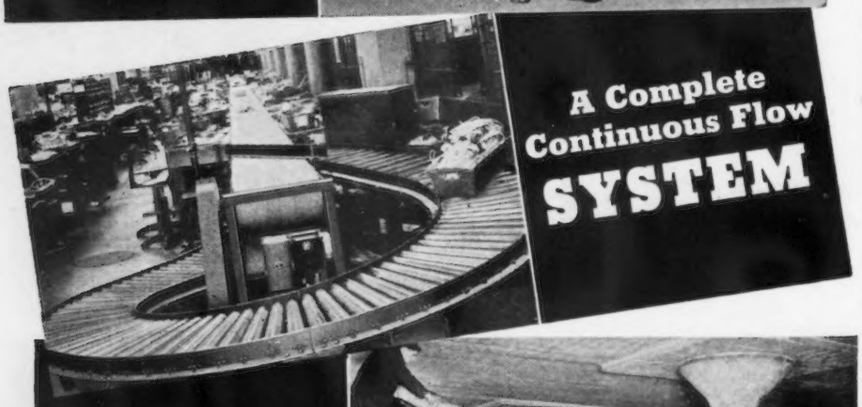
"Chips no longer weld to tools..
Tool regrindings reduced...
Gum deposits eliminated...
No more trouble with rust..."

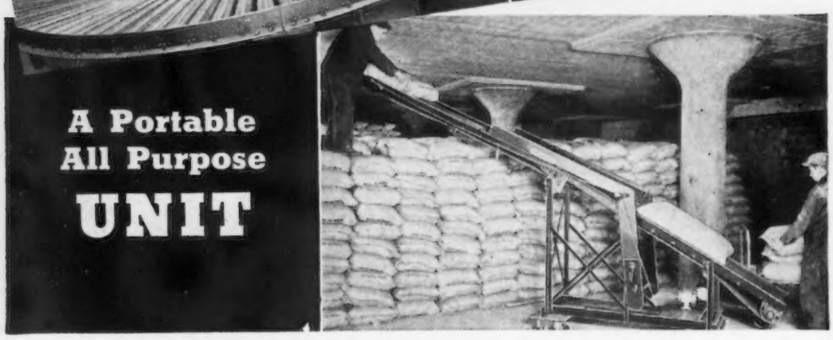
These are a few advantages observed at one large plant using Tycol No. 675 Heavy Duty Cutting Oil. You, too, will find that Tycol No. 675's demonstrated superiority will help you increase production . . . cut costs . . . produce finer, tarnish-free finishes.

For complete data about Tycol No. 675 Heavy Duty Cutting Oil, phone your nearest Tide Water Associated Office . . . NOW.

LUBRICATION—"ENGINEERED TO FIT THE JOB"







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Write for valuable reference book "Conveyors by Standard" Catalog No. 1A-97

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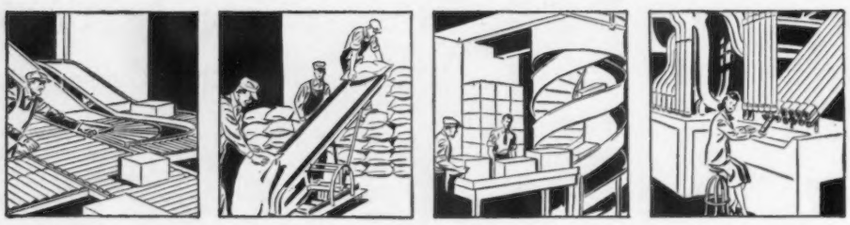

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furnace of 1,000 metric tons capacity at the Chatelineau works of Sambre et Moselle to be completed next January; a new semicontinuous mill for thin sheets for tinplate at the Flemalle works of Cockerill to be completed in 2 or 3 years. Experance-Longdoz & Arbed, Luxemburg, are reported to have ordered semicontinuous mills in USA and Ougree-Marihaye is also considering such a mill. These various plans would double the capacity of production of thin sheets of Belgium, raising it to about 500,000 to 600,000 metric tons a year, whereas tinplate capacity would be increased by about 60,000 metric tons to 90,000 metric tons a year. A new steelworks will be built at Monceau sur Sambre by the Steelworks and Mines of the Sambre.

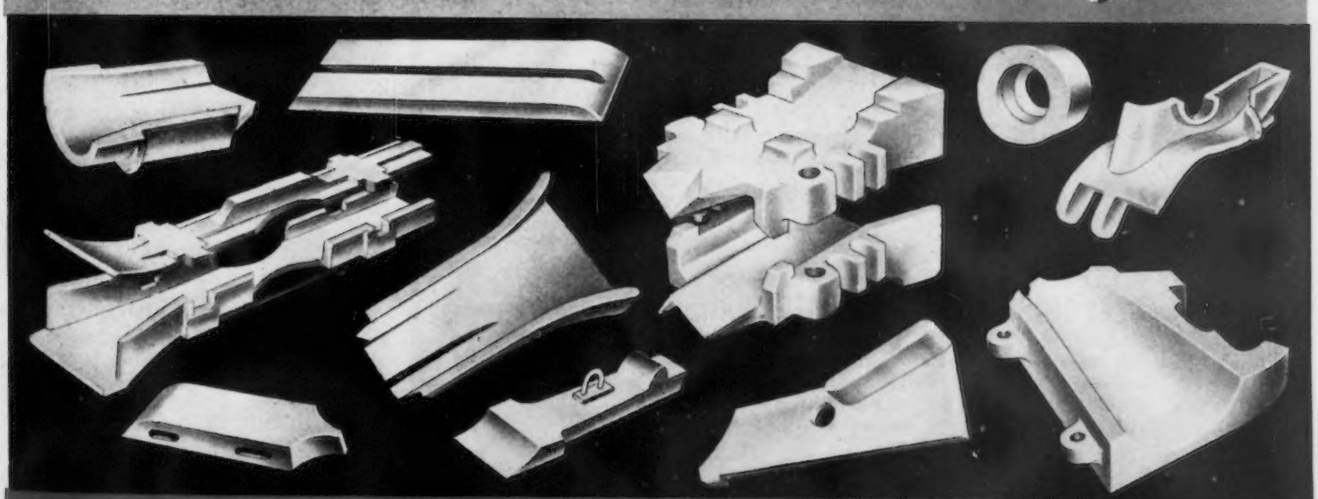
In order to develop the Belgian position in South American markets and probably, to engage in a fight with American producers a publicity campaign in favor of the Belgian products will be started by the Blast Furnaces and Steelworks Assn. through the South American Chamber of Commerce of Brussels which means that Belgian producers do not intend to lose this market. Recent increases of American steel prices have given new hopes along this line.

The new quota for export of Belgian iron and steel products to France has not been settled, with Belgium claiming that France requested a too high tonnage and that they do not want to deliver additional tonnage while prices elsewhere are more profitable. The export quota to the Netherlands has been increased by 100,000 metric tons to 500,000 metric tons a year and according to the new trade agreement with Italy, Belgium will export 50,000 metric tons of rolled products a year to that country. At the same time exports of manufactured products in iron and steel to France, and Italy will be increased.

With a record, since the liberation, of the export of 229,119 metric tons of steel products in June, Belgium and Luxemburg are not very far from prewar level, they take the first place among European exporters with England in the second place.

TRANTINYL

MILL GUIDES



YOUNGSTOWN ALLOY CASTING CORPORATION, YOUNGSTOWN, OHIO

Photo courtesy of
Dumore Co., Racine, Wis.

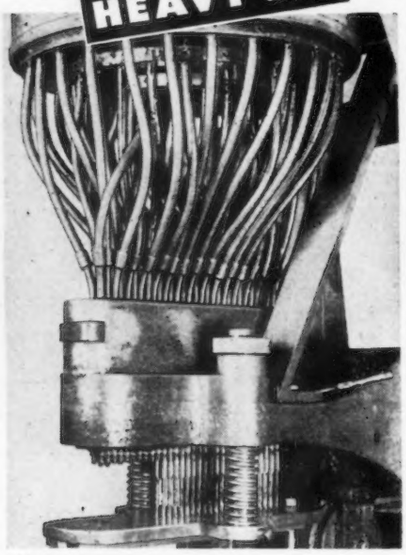


Photo courtesy of
General Gas Light Co., Kalamazoo, Mich.

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In the small portable tool (left above) the flexible shaft makes possible a small, light hand piece. This means a tool that can be manipulated freely, accurately and delicately with a minimum of fatigue.

In the heavy duty drill press (right above) the flexible shaft spindles make possible quick changes in set-up for different drilling requirements. They provide positive, reliable drives and give the machine time and cost-saving versatility.

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FLEXIBLE SHAFTS • FLEXIBLE SHAFT TOOLS • AIRCRAFT ACCESSORIES
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One of America's AAAA Industrial Enterprises

Britain Boosts Coal Price by 80¢ per Ton; Now $4.70 Above 1939

London

• • • **The pithead prices** of all qualities of deep-mined coal supplied at the pit for rail, road or canal delivery or shipped as cargo or bunker fuel into coastwise or foreign-going ships after midnight on Aug. 31, were increased by 4/ (80¢) per ton. As of the same date, the price of manufactured fuel was increased by the same amount.

In pursuance of an undertaking given by the National Coal Board to the Minister of Fuel and Power that the general level of coal prices would not be advanced without his authority, the Board has received the concurrence of the Government to the increase. The Minister has decided that an increase of 4/ per ton shall similarly apply to the prices of strip-mined coal produced by his Ministry.

Further increases in the delivered and f.o.b. prices of coal will be necessary on Oct. 1, in consequence of the increase in railway freight rates operative from that date.

The price of coal has been advanced several times since the outbreak of war. The present increase, like similar increases recently announced for transport, is a reflection of the higher costs now ruling. The last increase in the pithead price of coal was made on May 1, 1945. The present increase makes a total average increase of 23/5d per ton since 1939. Whereas in July 1947 the rise compared with 1939 in wholesale prices of basic materials was 136 pct, the corresponding increase for coal was only 100 pct. There is an estimated current loss at the moment of 3/3d on every ton of coal produced.

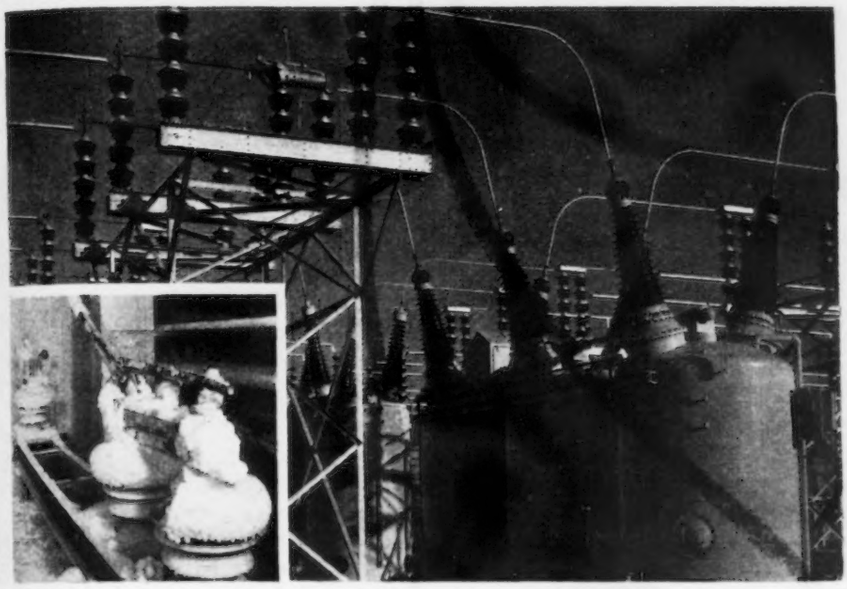
American and Polish coal, which the Board is importing on behalf of the Government, costs more than British coal, but is being sold at prices in line with those of British coal. The resulting loss is borne at the Government's request as a charge on the Board's revenues, thus spreading the burden evenly over all coal consumers in this country. The effect will be to increase the current loss per ton on British coal from 3/3d to 3/9d.

But the chief item contributing to the increased costs is a rise in the Wages Bill due to the intro-

HARPER fastening NEWS

IN ALMOST *ANY* APPLICATION!

Harper Fastenings of Non-Ferrous or Stainless Steel are Better than Common Steel



SILICON BRONZE PREVENTS "SEASON CRACKING" IN UTILITY POWER LINES

"Season Cracking" is the costly failure of unsuitable metals in power line fittings and fastenings because of seasonal temperature changes and exposure to weather. Experience has proved to Utility men that fastenings of silicon bronze resist cracking, hold securely and will not "freeze" from rust or corrosion. To reduce replacements in any outdoor application use Harper Silicon Bronze fastenings.

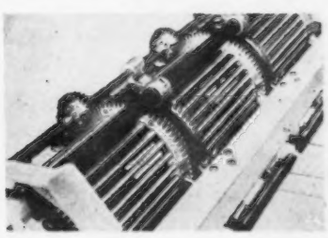
Left: A large installation of modern power line switches fastened with Harper Silicon Bronze Bolts.

BRONZE BOLTS PROTECT AGAINST UNDERGROUND DAMP

Junction boxes and pull boxes containing lights, wiring and switches used in underground subway and highway installations must be opened periodically for inspection and repairs. A large manufacturer of such equipment found that common steel bolts used to secure the box covers would corrode quickly in the continually moist environment and "freeze," necessitating costly delays and frequent replacement. By using Harper bronze bolts corrosion is prevented, covers easily removed and bolts reused.

STAINLESS FASTENINGS RESIST FRUIT ACIDS

A large manufacturer of fruit handling equipment faced a typical corrosion problem in a clever cherry stemming machine which he builds. Strength was required at strategic points, workability and flexibility in others. Acid corrosion resistance was essential, of course, in all parts to counteract the strong fruit acids. The forward-thinking manufacturer specified Harper stainless steel for the many bolts, nuts, washers, rivets, wing nuts and setscrews used to provide adequate mechanical properties and corrosion resistance for trouble-free operation, low cost maintenance and long-life of his product.



Brass, Bronze, Monel Metal, Stainless Steel

Harper Everlasting Fastenings are made from Brass, Naval Bronze, Silicon Bronze, Monel Metal, Stainless Steels . . . none from common steel.

The H. M. HARPER COMPANY
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HARPER SPECIALIZES IN EVERLASTING FASTENINGS

WENDT-SONIS
REAMERS
with
full length
CARBIDE
FLUTES

here's proof

LONGER WEARING
MORE ACCURATE

FROM A W-S PRODUCTION DATA REPORT

WORK PIECE: Steel connecting rod.
OPERATION: Finish ream pin hold for press fit bronze bearing.
TOLERANCE: .0000 - .0004.
MACHINE: Vertical multiple spindle.
TOOLS: H.S.S. Steel Reamer — ¾" Diameter.
Wendt-Sonis Full Carbide Flute Reamer.
Tool Style TFR—¾" Diameter.

COMPARISON

	WITH H.S.S.	WITH WENDT-SONIS
SPEED:	340 r.p.m.	960 r.p.m.
FEED:	.006	.006
RESULTS:	216 pieces per grind 1876 pieces per tool	1453 pieces per grind 12387 pieces per tool

THE W-S LINE of reamers is so complete, that it can meet practically all of your reaming requirements. W-S reamers produce a far better finish, eliminating grinding operations in many cases. Full length carbide flutes eliminate "wobbling" commonly caused by wear on steel flutes. Maximum bearing surface in the hole and guide bushing assures perfect hole alignment. Get details in connection with your job requirements. Write: WENDT-SONIS COMPANY, Hannibal, Missouri or 580 North Prairie Ave., Hawthorne, California; also Wendt-Sonis Chicago Warehouse, 1361 West Lake St., Chicago, Illinois.

WENDT WS SONIS

CARBIDE TIPPED CUTTING TOOLS

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duction of the 5-day week. The gross cost of the extra wages cannot be accurately assessed but it is more than 2/6d per ton. It will only be reduced if and when remaining restrictions on output are eliminated.

Rebuilt Coke Battery Is Running At Clairton

Clairton, Pa.

• • • **The current coke shortage,** which has curtailed blast furnace production in the Pittsburgh district, is being relieved substantially by the ovens of rebuilt battery No. 21 at Clairton Works of the U. S. Steel's Carnegie-Illinois Steel Corp. which went into operation Aug. 29.

The new battery consists of 87 Koppers-Becker underjet type coke ovens with self-sealing doors and double collecting mains. It has a total carbonizing capacity of 2500 tons of coal a day, while the entire Clairton byproduct coke plant, largest in the world, has a daily coal carbonizing capacity of 30,000 tons.

Battery No. 21 is the second of two units rebuilt by Koppers Co. at Clairton, the rebuilding of identical battery No. 22 having been completed a year ago. These two batteries have the largest capacity per oven in the United States, each of the ovens being charged with 22 tons of coal.

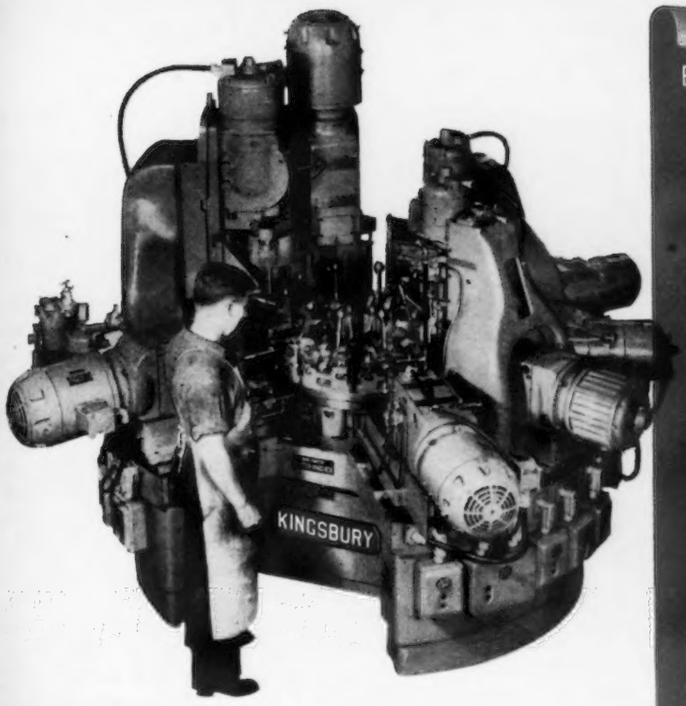
Work on the new battery was commenced slightly less than one year ago and was rushed to completion because of the current shortage of coke used for smelting iron ore in the blast furnaces.

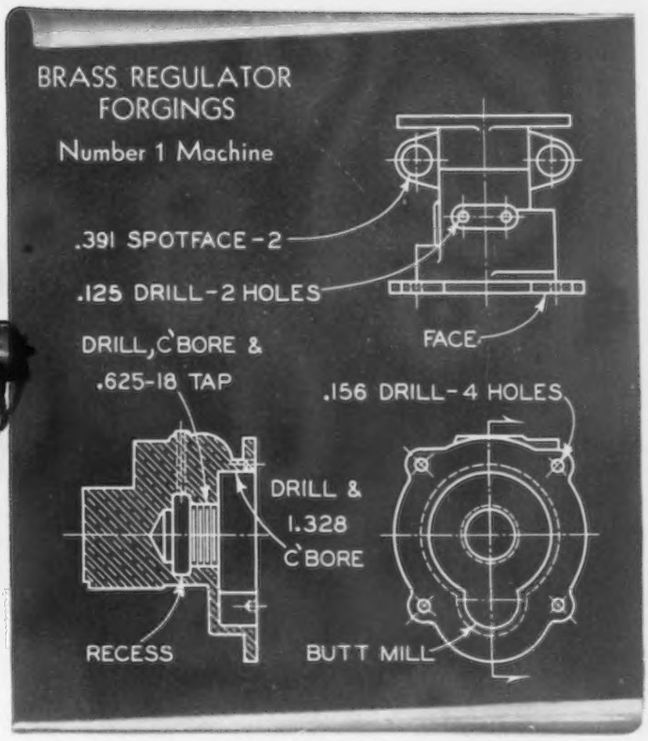
The rebuilding of 21 and 22 batteries is part of a general modernization program at Clairton designed eventually to replace all of the old batteries with modern equipment.

Basic Refractories Teams With Gathmann

Cleveland

• • • **Gathmann molds** and methods of steel ingot production are to be represented exclusively by Basic Refractories, Inc., of Cleveland, according to a recent announcement by Mark Gathmann, vice-president, Gathmann Engineering Co., of Baltimore. "The new selling arrangement is effective immediately and is expected to result in increased service to all our customers," he stated.

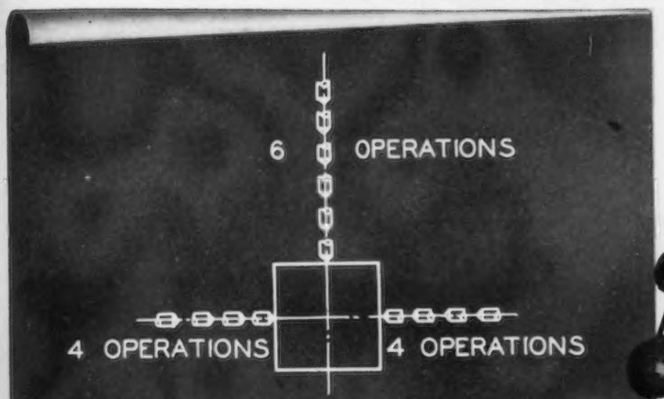




PROBLEM Drill, spotface, rough and finish counterbore, face, recess, butt mill and tap 420 pieces per hour with one operator.

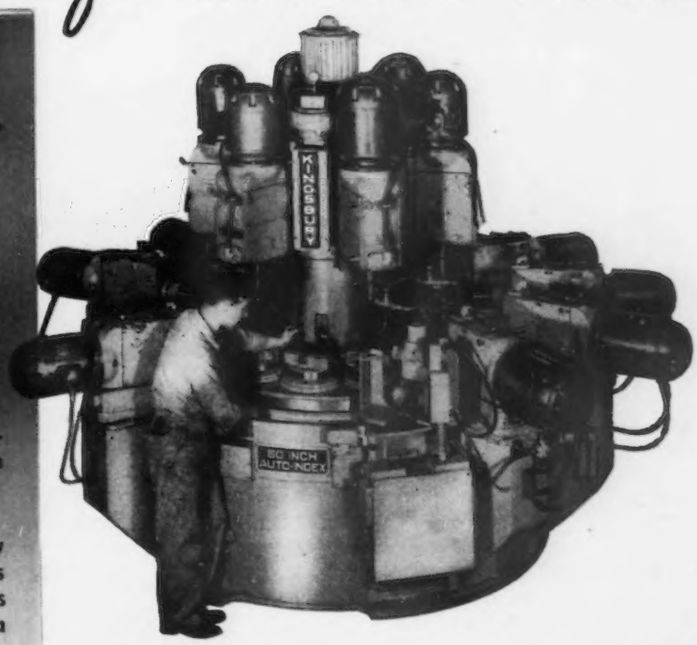
METHOD Twelve automatic self-contained units perform all the operations in one chucking. Two units have multiple spindle auxiliary heads. Guide bushings in steel plates that are piloted onto the fixture locate the .125 and .156 drills accurately. One unit has a standard milling attachment and one a standard recessing tool. Data: 26 in. index table with 10 identical fixtures. Base diameter 80 in. Gross production: 530 pieces per hour.

COMBINED OPERATIONS *for* HIGH PRODUCTION



PROBLEM Successive operations in high production on two opposed faces and a third face with one operator.

METHOD Twelve 2-jaw self-centering screw chucks hold the work. Every time the table indexes each chuck rotates 180°, so that the horizontal units can work on opposite faces. Vertical units on a central column operate on the third face. The chucks rotate in a harmonic motion, starting and stopping slowly. A compressed air motor opens and closes them quickly. Indexing can be either completely automatic or under the control of the operator. All control is electric. Data: 60 in. index table, 12 stations, 14 automatic, self-contained units. Over-all diameter approx. 140 in.



Both Machines in Action — Booth 410

Kingsbury Machine Tool Corp., of Keene, N. H.

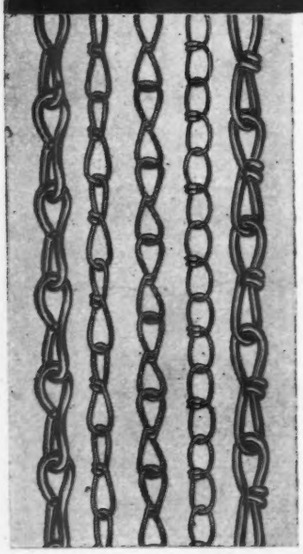
KINGSBURY

75

...keeps his distance on a HERCULES* PICKET CHAIN

made of

KEYSTONE WIRE



While most chains are not stronger than the weakest link, Hercules chains are not weaker than the strongest bull. Just let any onery, frisky critter get on the end of a well-anchored Hercules picket chain made of 8-gauge Keystone wire, and you know he'll stay put.

Or, if you need lighter chain for your dog, porch swing, hammock, well pump, boat tie or any other use, you can look to Hercules for the exact type of chain you need. A complete line is offered — all made of quality Keystone wire.

A long list of industrial firms are using Keystone wire in their products. Whatever your wire needs, Keystone can normally supply them.

Cincinnati Pump & Mfg. Co., Cincinnati, Ohio

KEYSTONE
MUSIC SPRING WIRE

SPECIAL ANALYSIS WIRE for all industrial purposes

KEYSTONE STEEL & WIRE COMPANY
PEORIA 7, ILLINOIS

British Steel Union Asks Nationalization

London

• • • **The Iron and Steel** Trades Confederation, the trade union of the workers in the iron and steel industry, in a resolution unanimously passed by the executive council at its quarterly meeting declares that the union "stands for and demands full and immediate nationalization of the iron and steel industry."

Surprise was expressed at the meeting at statements in the press that workers in the industry do not want nationalization. In a statement, the union says that every ton of steel possible is being produced subject only to sufficient coal supplies. "Let there be no misunderstanding, the officers and executive council brought from all the iron and steel districts of England, Scotland and Wales demand immediate nationalization. This is the voice the Government must not ignore," the statement concludes.

Armco Buys Electric Steel Plant for Cash

Washington

• • • **Government - owned** electric steel ingot facilities, erected at a cost of $423,000 and used during the war in conjunction with American Rolling Mill Co. property at Middletown, Ohio, has been sold to the firm for $250,000 cash.

Government - owned equipment not included in the Armco sale will be sold and be removed by WAA within the next six months.

Armco told WAA that it planned to continue production of alloy steel ingots over the next several months until a new electric furnace plant now under construction is completed, after which the newly purchased property will be used as a service facility.

WAA Sells Refinery

Washington

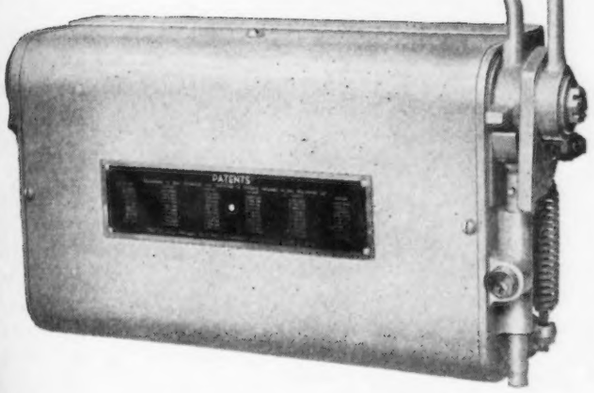
• • • **A surplus of 15,000-gal,** 100-octane gasoline refinery in Richmond, Calif., has been purchased by Standard Oil Co., of Calif., which operated it during the war and on whose land the facilities had been built by the government. Constructed at an original cost of $22 million, the sales price was scaled down to $6 million.

Elwell-Parker leads again with

E. P. E.

ROLOTAC

CONTROLLER

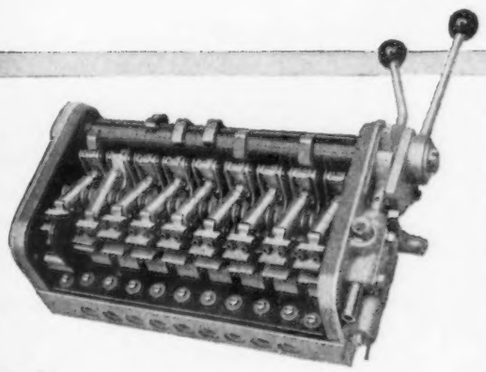


the electric truck controller based on an entirely new principle!

Elwell-Parker has developed the ROLOTAC controller to withstand the heavier loads, and more frequent starting and stopping encountered with modern trucks. ROLOTAC embodies a new principle for super-speed—the trigger snap and rocking action assure an instant make and break at the tips and not on the contact working surface. The breaking of heavier currents is handled by magnetic blowout. ROLOTAC has larger contacts and greater current capacity. It conserves power, requires less service, and assures continuous handling of larger loads in less time. ROLOTAC includes all well-known E-P safety features, such as the "dead-man" control. It is a worthy companion of the E-P built, Class B Motor—both can take all the power the recommended batteries will furnish.

The most gruelling tests prove ROLOTAC is an extra-husky controller. It has seen two and one-half years actual operation, among others, in one forge shop for over 20 hours per day with over 7,000,000 make and break operations.

Have your E-P man give you full details on this newest superiority of Elwell-Parker Trucks. The Elwell-Parker Electric Co., 4225 St. Clair Ave., Cleveland 14, Ohio.



10 SUPERIORITIES OF ROLOTAC

1. Super-swift snap action.
2. Arc blowout feature.
3. Tamper proof, locked mechanism.
4. Shock proof construction.
5. Interchangeability of fingers and contacts.
6. Extra large contacts.
7. Positive, efficient transfer of current.
8. Accommodation of no plug feature.
9. Four speeds in both directions.
10. No adjustments required.

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POWER INDUSTRIAL TRUCKS

Established 1893

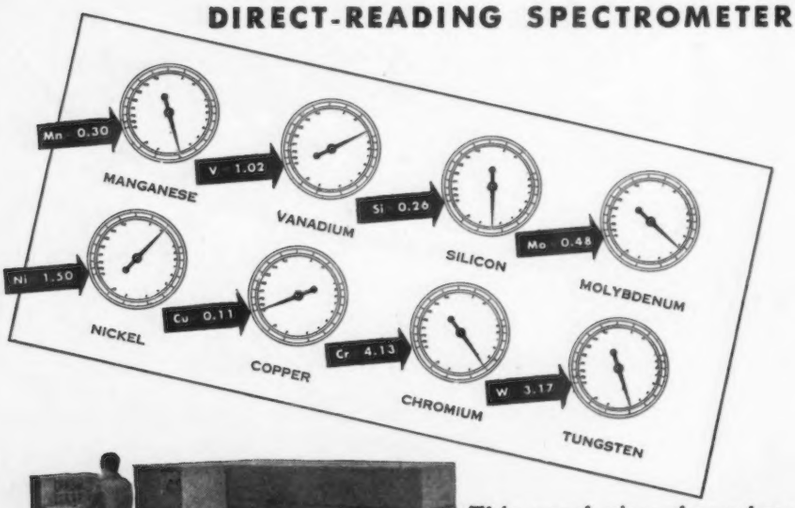
SPECTROCHEMICAL ANALYSIS

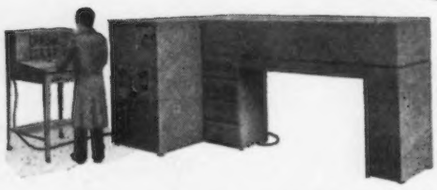
SPEEDED . . . simultaneous determination of eight constituents obtained in 40 seconds

SIMPLIFIED . . . analysis completely made by a single technician

MECHANIZED . . . line intensities automatically indicated on large, easily read dials

with the Baird Associates-Dow
DIRECT-READING SPECTROMETER





This panel view shows how easily determination is indicated for constituents in a typical steel analysis.

Production control analysis, for the desired constituents, is obtained within 40 seconds after the operator has pushed the button that initiates the automatic analyzing cycle. The analysis requires no photographic darkroom, no specialized operating techniques, and no reading of graphs.

Precision of analytical determinations is equal or superior to that of present photographic means using conventional spectrographs.

The operating principle of the direct reading spectrometer involves spectral measurement of a spark or arc struck between two electrodes. The intensity of individual spectrum lines is measured with respect to standard lines by photomultiplier tubes; and the output of these tubes, suitably amplified, is used to trigger circuits that control indicating timers calibrated directly in concentration units.

Other special apparatus produced by Baird Associates, Inc. over the past decade include spectrographs, spectrographic power sources, density balances, infra-red spectrophotometers, microphotometers, infra-red gas analyzers, and Rayleigh interferometers.

Baird Associates-Dow Direct-Reading Spectrometer offers the advantages of faster control analyses and restoration of skilled laboratory staffs to other functions. For detailed information, request Bulletin 26.

Baird Associates, Inc.
INDUSTRIAL PHYSICISTS
39 UNIVERSITY ROAD CAMBRIDGE 38, MASS.

Electromet Increases Some Ferroalloy Prices Due to Higher Costs

New York

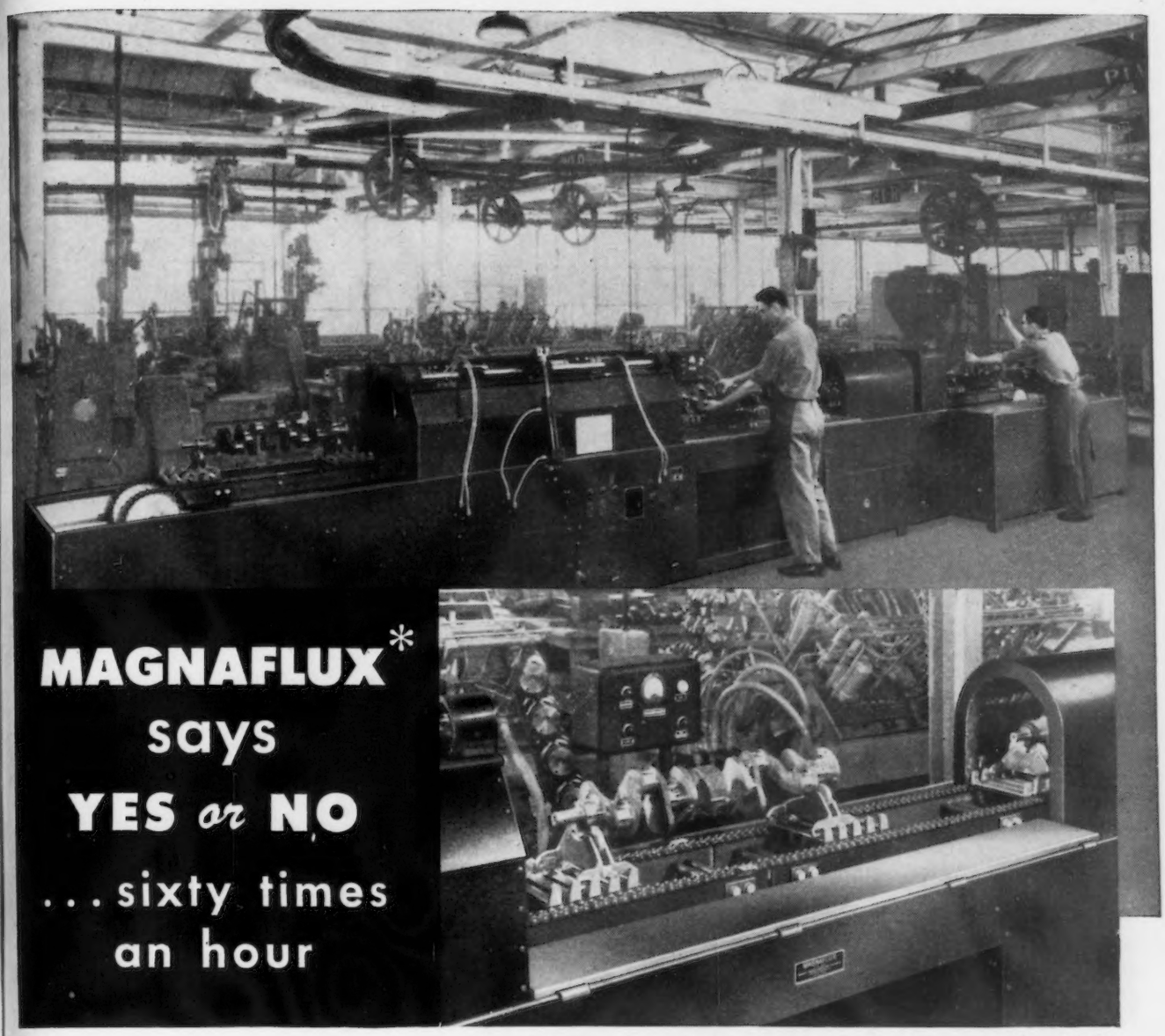
• • • **"Because rising costs** of power, transportation, labor, ore, coal, scrap and other raw materials have brought about an unsound relationship between overall costs and current prices," Electro Metallurgical Sales Corp. announced today some revised prices for contract users, which will become effective Oct. 1. Proportionately higher prices become effective immediately on a spot basis.

Specific increases in the silicon alloys (Eastern zone, carload, lump, bulk) are as follows: 50 pct ferrosilicon—current price 7.8¢ a lb of contained silicon, new price 8.8¢; low-aluminum 65 pct—current price 10.3¢, new price 11.55¢; 75 pct—current price 10¢, new price 11.2¢; 85 pct—current price 11.3¢, new price 12.7¢; 90 pct—current price 12.8¢, new price 14.35¢. Corresponding increases apply in the low-aluminum grades of 50 pct, 75 pct, 85 pct and 90 pct ferrosilicon. Silicon metal prices are increased 2¢ a lb in all grades, quantities, and sizes; 15 pct ferrosilicon in the finely ground sizes is raised $10.75 a gross ton.

All grades of ferrochrome, both high-carbon and low-carbon, are increased 2¢ a lb of contained chromium in all quantities and sizes. The base prices of chromium metal are increased 7.5¢ a lb of contained chromium.

Standard ferromanganese is raised $15 a gross ton, making the new carload base price $150 per gross ton. Medium- and low-carbon ferromanganese are raised 2¢ a lb of contained manganese in all grades, quantities, and sizes, making the new carload, lump, bulk price for medium-carbon ferromanganese 16.5¢ per lb of manganese contained in the alloy. Silicomanganese base prices are raised from 6.65¢ a lb of alloy to 7.4¢ in the maximum 1.50 pct carbon grade, and from 6.55¢ to 7.20¢ in the maximum 2.00 pct carbon grade. Low-iron ferromanganese is up 1.5¢ per lb of contained manganese, and manganese metal is up 2¢ per lb of metal.

Increases in the briquetted alloys are as follows: Silicon briquets up 0.55¢ making the new price 4.65¢



MAGNAFLUX* says YES *or* NO ... sixty times an hour

Magnaflux automatic unit in automotive plant for continuous inspection of heavy duty crankshafts includes stations for loading, inspection (inset) and unloading; magnetizing and de-magnetizing tunnels, and a continuous motion conveyor through unit. Capacity is 60 crankshafts per hour of as many as 40 varieties.

Complete, Accurate Inspection at Production Line Speeds

Inspection with Magnaflux in your production line gives this double advantage that can mean many hours and dollars saved. First, Magnaflux provides complete and accurate inspection that's non-destructive. Second, you get inspection at production line speed for continuous testing, when desired, of a wide variety of parts. The machine pictured, for example, says *Yes* or *No* 60 times an hour in crankshaft inspection.

Added to this speed is the proved ability of Magnaflux to tell the hard or happy truth with unfailing dependability. Here is why: Magnaflux sets up a magnetic field in parts under inspection. Ferro magnetic particles on the magnetized part *instantly* trace patterns to outline discontinuities in metals, castings or welds—give definite indication of location, extent and shape.

Doubt and delay on *pass* or *rejection* are immediately removed; and because Magnaflux is non-destructive there's no waste on parts under inspection. They are ready for use. Make it a point to discuss your inspection problems with Magnaflux engineers. Let them help you as they have helped so many other manufacturers. Write today for full information.

**Magnaflux—The Trade Mark of the Magnaflux Corporation applied to its equipment, materials and methods for magnetic particle inspection.*

MAGNAFLUX CORPORATION

5902 Northwest Highway, Chicago 31, Illinois

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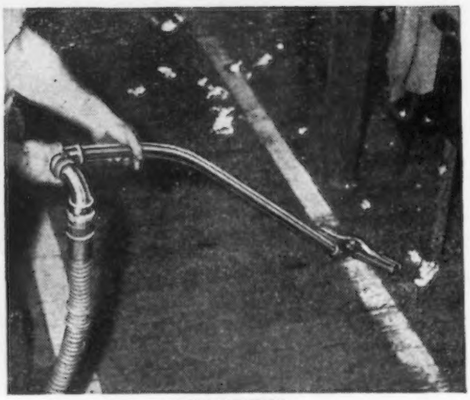
MAGNESIUM

BRISTLES



PICK UP CLEAN UP and SAVE with SPENCER VACUUM

TINFOIL

Vacuum is a four-way tool in modern industries. It picks up excess materials, such as tinfoil, sawdust and sand. It reclaims metals such as magnesium, gold and solder. It keeps the plant clean and reduces the effect of dust on workers, raw materials and the finished goods.

Vacuum can also be built into your special machines as illustrated above by the Spencer which pulls bristles from the inside of an automatic machine making typewriter brushes.

The same machine, either portable or stationary, frequently performs all four services, and usually saves its cost in a few months. A complete range of types and sizes with vacuum tools designed especially for industrial work.

ASK FOR THE BULLETINS:

No. 137—Boiler Cleaning
No. 102—Portable Vacuum Cleaners
No. 125—Central Vacuum Cleaners
No. 130—Sump Tank Cleaner
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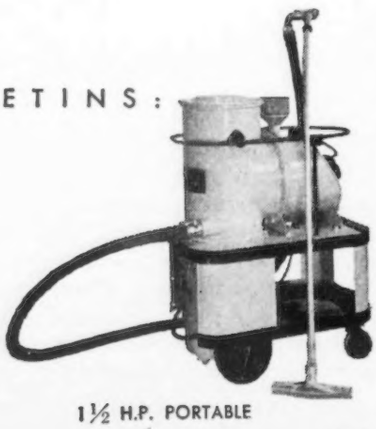
No. 109—Gas Boosters
No. 112—Foundry Blowers



1½ H.P. PORTABLE

324 E

SPENCER HARTFORD VACUUM CLEANING

THE SPENCER TURBINE COMPANY, HARTFORD 6, CONN.

a lb for the large size and 4.8¢ a lb for the small size; chromium briquets up 1.25¢ making the new price 11.1¢; ferromanganese briquets up 1¢ making the new price 8¢; and silicomanganese briquets up 0.9¢ making the new price 7.65¢.

All grades of ferrovanadium are raised 20¢ a lb of contained vanadium. Vanadium oxide is raised from $1.10 a lb to $1.20.

Increases in the zironium alloys are as follows: The 12/15 pct grade up 0.5¢ a lb to 6¢; the 35/40 pct grade up 1.4¢ a lb to 18.4¢.

New prices for some miscellaneous alloys include: Calcium-silicon 15.5¢ a lb; calcium-manganese-silicon 16.75¢; "SMZ" alloy 14.3¢; "CMSZ" mixes 15.75¢; "Silcaz" alloy 37¢; Special Graphitizer 14.75¢; calcium metal $1.85; and ferromanganese-silicon mix 14.25¢.

A company spokesman stated that in general no increases are now being made in crushing and packing premiums, nor are quantity, zone, or spot differentials being changed. No revisions are being made in the prices of tungsten, titanium, columbium, and boron alloys.

In commenting on the price changes, a company official said: "We are obliged to make these upward revisions in prices because of rising costs beyond our control all along the line. It has been and remains our firm policy to maintain all our varied operations at maximum efficiency and to keep prices at the lowest level that conditions within our control permit. In the present situation we are left with no alternative but to make these revisions, if we are to continue to operate on a sound business basis."

Issues Standards List

New York

• • • **An entire new** listing of its 874 standards is now available free of charge at the American Standards Assn. and may be obtained from their office, 70 East 45th St., New York 17, according to the association.

The new listing of American standards includes prices which are revised slightly upward, because of increased production cost.

A number of additional revised standards approved since the January 1947 issue of All American Standards are included.

Stronger, Lighter Hand Truck Made by Welding Tubular High Carbon Steel

BY JAMES B. HOWLAND, PARTNER
TUBAR BENDING & MANUFACTURING CO., CLEVELAND, OHIO

THE new Tubar Hand Truck has outstanding strength and low weight because it is made of tubular high carbon steel with an exceptionally thin wall (.076″). Frame of the largest model Tubar weighs only 36 pounds, yet carries a 1,000-lb. load. Fig. 1 shows how light it is. The addition of reinforcing tubes from the kick-bar to the handle (see Fig. 3) makes a "stevedore" model with a 2,500-lb. capacity. Conventional hand trucks of these capacities weigh more than twice as much.

The all-welded tubular frame has other advantages in addition to lightness. Constructed without bolts or rivets, it has a smooth top and bed without obstructions. There is no danger from wood splinters or sharp edges of metal. Design of the frame distributes the load and reduces dead weight on the axle, facilitating handling. The operator's hands follow the curve of the handle in "breaking" the load to a pulling or pushing position. The Tubar Truck is patented.

Fig. 1. Demonstrating the lightness of the Tubar truck.

JIGS USED IN WELDING

We use two sizes of tubing—$1\frac{1}{16}$″ O.D. and $\frac{7}{8}$″ O.D. The smaller telescopes into the larger size at the maximum stress point, for greater strength. The tubes are bent on a bending machine (see Fig. 2). The toe plates are bevelled and forged to a point. Toe-plate sides are cut from $\frac{3}{4}$″ high carbon steel plate by an acetylene cutting machine. The frame parts are assembled in a jig and tack-welded, then finish-welded in another jig (see Fig. 3).

In setting up production, we had difficulty welding the high carbon tubing until we tried the new Lincoln "Shield-Arc LH-70" electrode, designed for high carbon and other difficult-to-weld steels. With "Shield-Arc LH-70" we are able to weld speedily without costly preheating or special welding procedures.

Further information on the procedure for this electrode may be obtained by writing THE LINCOLN ELECTRIC COMPANY, Dept. 149, Cleveland 1, Ohio.

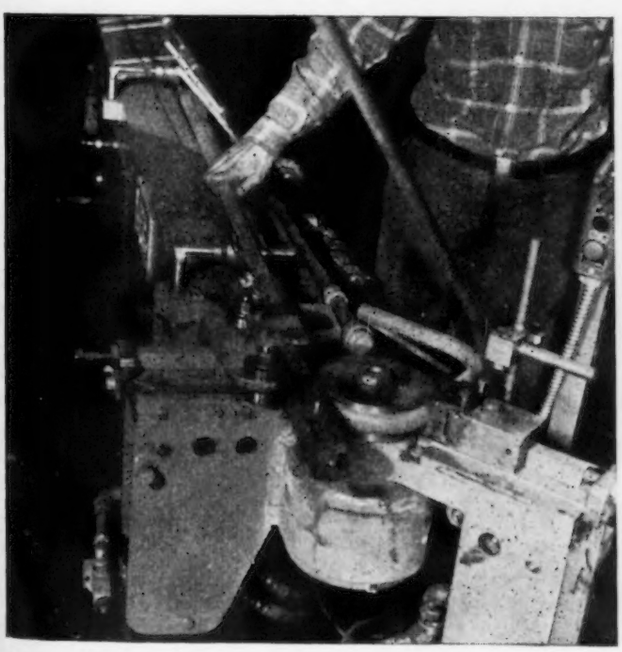


Fig. 2. All bending is performed on a tube bending machine.

Fig. 3. Finish-welding a "stevedore" model. Jig rotates so most welding is in downhand position.

BOOTH 125
MACHINE TOOL SHOW
SEE HOW

UNION CHUCKS

CUT
PRODUCTION COSTS

At the Chicago Machine Tool Show be sure to see what's new in *the broadest line of chucks in the world* — Union chucks.

See, for instance, how Union indexing chucks cut labor, machine time and fixture costs by eliminating multiple handling and chucking of work with more than one face to be machined.

Investigate the advantages to you of Union power operated chucks—electrical, air and hydraulic. See how fingertip control of a greater range of jaw pressures will give you faster production with less man-time, down-time and operator fatigue.

The Union Manufacturing Company has been serving industry for 70 years. In chuck design and manufacture, Union has continually kept ahead of industry's needs, opening the way to greater productivity of men and machines. This engineering leadership, as well as Union's widely recognized integrity of workmanship, are reflected in the complete line of chucks described and illustrated in Catalog No. 62. Distributors in all important industrial centers.

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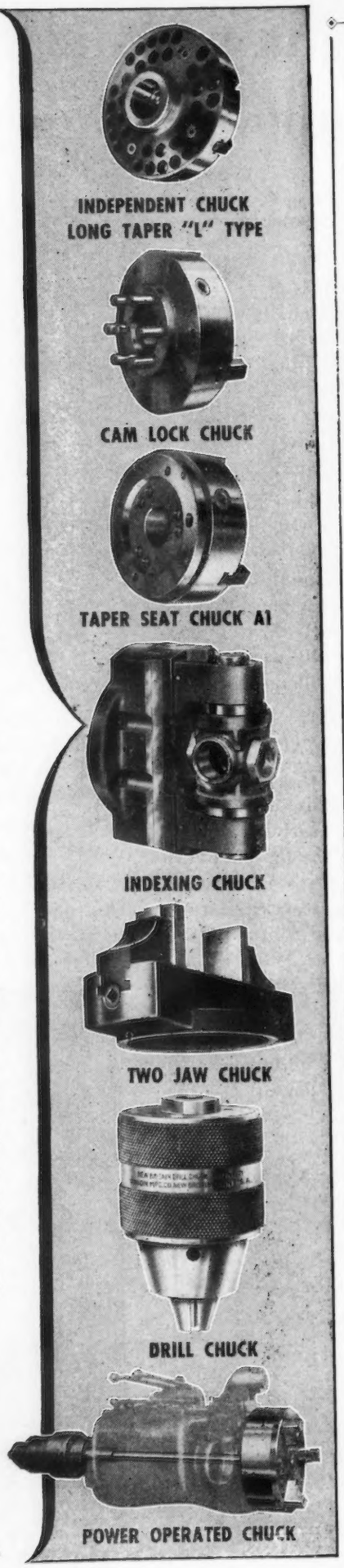
298 Church Street, New Britain, Conn.



Dr. Old Appointed To Atomic Energy Group

Cambridge, Mass.

• • • **Dr. Bruce S. Old** has been appointed consultant to the Atomic Energy Commission, Div. of Research, in the capacity of Chief Metallurgist. Dr. Old will continue his present work with Arthur D. Little, Inc., Cambridge, Mass., industrial research laboratory, and will serve the Atomic Energy Commission on a part-time leave of absence from Arthur D. Little, Inc. Dr. Old will assist in organizing the work of the Commission in the metallurgical field.

Dr. B. S. Old

In his recent work with Arthur D. Little, Inc., Dr. Old has been particularly identified with development of the technique for operating blast furnaces under pressure, with consequent increase in iron output. During the war he served as commander in the Office of Research and Invention of the Navy, where he was engaged in planning and coordinating research on guided missiles, jet propulsion, and metallurgy.

Dr. Old graduated from the University of North Carolina in 1935 and received his doctorate from Massachusetts Institute of Technology in 1938.

Body Men to Meet

Detroit

• • • **American Society of** Body Engineers will meet in Detroit on November 5-7.

Technical sessions will discuss styling, production engineering, small cars, seating comfort, truck bodies, buses and coaches, materials in body construction and passenger car and body engineering.

An open house sesson is planned for November 5. The speaker will be Dr. Allen A. Stockdale of the National Industrial Information Committee of the National Association of Manufacturers.

Here are on-the-spot facilities...

. . . serving the magnificent Metal Working Industry

The Machine Tool Builders Show in Chicago will reveal the latest developments in machine tool design and practice. D. A. Stuart Oil Co. products will play their part in helping these machines produce peak efficiency and smooth performance. Stuart offers you the cutting fluids and special lubricants to assure this performance . . . with complete laboratory facilities . . . a modern factory with ample production and delivery facilities . . . products second to none . . . and a location that's convenient for delivery.

Write, wire or phone that we may serve you, too . . . and when you're in Chicago, we'd be glad to have you visit us!

PHONE ROCkwell 7100

We suggest that you clip this page as a reminder of the Stuart facilities available for your use during, and after the Chicago Show . . .

BOOTH 317L

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EST. 1865 LIMITED

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CODOL SOLVOL SUPERKOOL KLEENKUT

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MOLINE
SPECIALLY DESIGNED
MACHINE TOOLS
can cut production costs
at the
MACHINE TOOL SHOW
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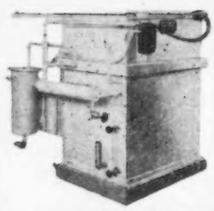
MOLINE TOOL CO.
Moline, Illinois

For DEGREASING • WASHING
RINSING • PICKLING and DRYING
of METAL PARTS



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PICKLERS

Standard and Special Types of equipment from the smallest to the largest sizes for a wide variety of metal degreasing, washing, cleaning, rinsing, pickling, drying and allied process operations.

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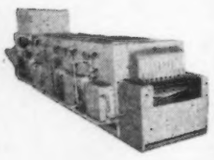
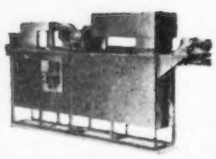
WASHERS
DRYERS





OPTIMUS EQUIPMENT
FOR CLEANING · RINSING · DEGREASING · PICKLING AND DRYING OF METAL PARTS

1947 Machine Tool Show

(CONTINUED FROM PAGE 198)

Booth No. Exhibitor

328C—Hy-Level Screw Products Co.
New liquid pressure bar feed attachment designed to eliminate feed tubes, feed fingers, ball races, silencers, extended pusher rods, and other extras.

448—Ideal Industries, Inc.
Soldering tools; portable industrial cleaners; heavy duty live centers.

35H—Illinois Gage Co.
Speed-O-Matic torqueless nut runner.

302—Illinois Tool Works
New fine pitch gear generator; new toolgraph chart; die-filing machine; gear checking machines; metal cutting tools.

404—Independent Pneumatic Tool Co.
New pneumatic impact wrenches; pneumatic and electric tools for general production and maintenance.

58—Ingersoll Milling Machine Co.
Forty-ton vertical spindle milling machine for carbide milling; 9-ton milling cutter for aluminum ingot scalping machine; scale models of recently developed machines; precision measuring instrument for cutters; improved cutters.

504—Jacobs Mfg. Co.
New keyless impact chuck; new tool-chucking application of Rubber-Flex collet; standard line of various types of chucks.

313C—Charles L. Jarvis Co.
Power tools; new torque-driven tapper; Torqomatic; newly acquired line of taps and dies.

145—Johnson Bronze Co.
Cast bronze, sheet metal, babbitt lined, self lubricating sleeve-type bearings.

326—Jones & Lamson Machine Co.

117—Kaukauna Machine Corp.
New portable universal drilling and tapping machine; new portable horizontal drilling and tapping machines; indexing table, new boring tools; machines in operation.

301—Kearney & Trecker Corp.
Twenty-eight new and improved milling and precision boring machines in operation; new knee-type milling machines.

570—Kennametal, Inc.
New line of mechanically-held tools; single-point tools; solid precision boring tools; mills, roll-turning tools; balls for hole sizing, check valves, and hardness testing; rolls for cold rolling; wear-resistant parts.

432—Kent-Owens Machine Co.
Milling machines with automatic index fixture, automatic air-actuated fixture, automatic spindle stop and other attachments and accessories.

502—King Machine Tool Co.
Vertical turning and boring machine equipped with right hand swivel turret, left hand swivel ram head, and right hand side head.

410—Kingsbury Machine Tool Corp.
Automatic indexing machines in operation with high-production features stressed.

Special KAYDON Roller Thrust Bearings, 9.437" x 15.125" x 3.500", with split races and split cage

KAYDON *Split* BEARINGS

Easy to put on or take off without dismantling machine

EASY on . . . easy off! These special KAYDON Roller Thrust Bearings have split races and a split cage . . . so you don't have to dismantle the machine to assemble them into position or to remove them from the shaft. There are many applications where this unique type of bearing is a big saver of time and money.

The precision engineering and ingenuity which make these special bearings perform so successfully are major factors in KAYDON procedure to assure dependable quality, rugged strength, and high precision in all KAYDON standard and special bearings . . . from 4" bore to the extremely large KAYDON Bearings, up to 10 feet outside diameter. • In many fields of heavy-duty machinery, KAYDON Bearings help designers add important advantages. Steel mill equipment that operates under terrific loads and high temperatures, mammoth paper mill machinery, huge precision grinders, rugged road-building units, excavators, hoists, crushers, bending machines and other heavy-duty machines, are serving industry better because of KAYDON Bearings.

* * *

Expand your opportunities through use of these modern bearings. Capacity now available for all types and sizes. Contact KAYDON, in confidence!

KAYDON *Types of Standard or Special Bearings:*
Spherical Roller • Taper Roller • Ball Radial
Ball Thrust • Roller Radial • Roller Thrust

THE KAYDON ENGINEERING CORP., MUSKEGON, MICH.

All types of Ball and Roller Bearings 4" bore to 120" outside diameter

ANY METAL • ANY PERFORATION

Industrial—Well balanced screens of excellent material and workmanship to assure maximum screen production combined with durability.

Ornamental—Approved patterns and finishes including many exclusive and characteristic designs for grilles and furniture. We invite your inquiries.

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PUNCHES—DIES
RIVET SETS
COMPRESSION RIVETER DIES
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Made from high-grade alloy tool steels properly heat-treated, of uniform high quality—may be purchased with complete confidence for maximum service.

SINCE 1903

WRITE FOR OUR NEW CATALOG 46

GEO. F. MARCHANT COMPANY
1420-34 So. ROCKWELL ST., CHICAGO 8, ILL.

NEWS OF INDUSTRY

Booth No. Exhibitor

151—W. B. Knight Machinery Co.
Two new and one recent type vertical milling and precision boring machines; power feed rotary table.

122—Kropp Forge Co.
Iron and steel forgings and forging dies.

303—Landis Tool Co.
Improved centerless thread grinder, thread rolling machine, thread rolling machines and special attachment; receding chaser pipe threading and cut-off machine; grinders, new profile dresser; other machines and accessories.

434—Langelier Mfg. Co.
Way type and automatic indexing machines; automatic positive cam-feed drilling units; lead screw feed tapping units; swaging machines.

35C—Lansing Engineering Co.
Electronic parts counting machine as employed in metalworking industries.

642—Lapointe Machine Tool Co.
Two large and two small vertical broaching machines; one large and one small horizontal broaching machine; universal broach and tool grinder. Machines tooled for variety of operations.

14D—LaSalle Steel Co.
Parts produced from special cold-finished carbon steel bars.

507—R. K. LeBlond Machine Tool Co.
Three new heavy-duty engine lathes; new dual-drive lathe; representative models of other lathes.

111—Lees-Bradner Co.
Four types of production gear-hobbing machines; universal thread-milling machines; new gear-hobber for use with carbide hobs; special features.

268—Lehmann Machine Co.
Electronic motor-driven control for sustained spindle speed hp; new type engine lathe, electronic motor-driven; Hydratrol lathe motor; large hollow-spindle headstock; Hydratrol headstock interior; boring tool bars and blocks.

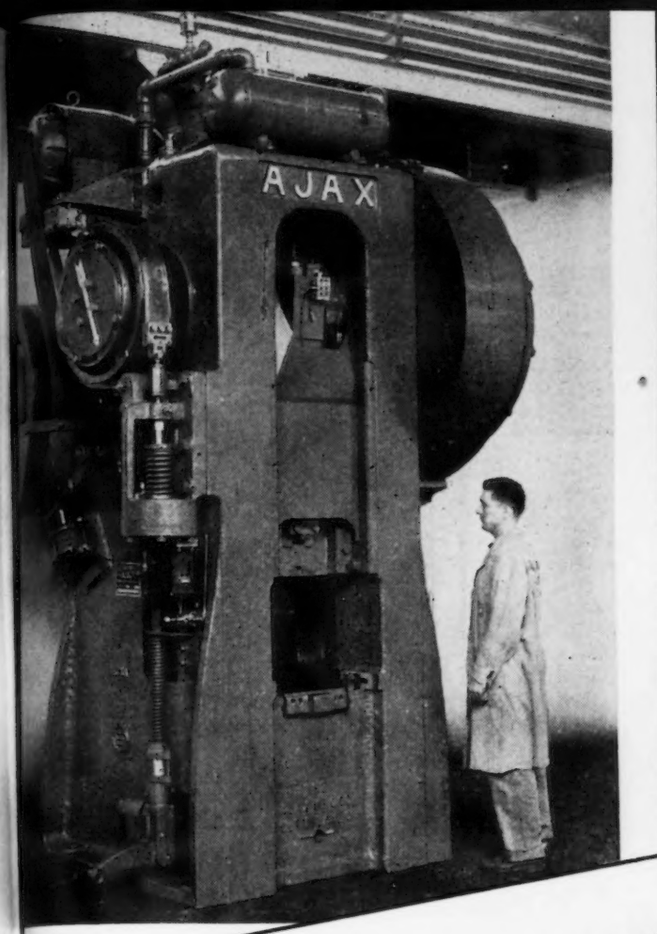
308—Leland-Gifford Co.
Several types of spindle drilling machines; hydraulic feed drilling unit.

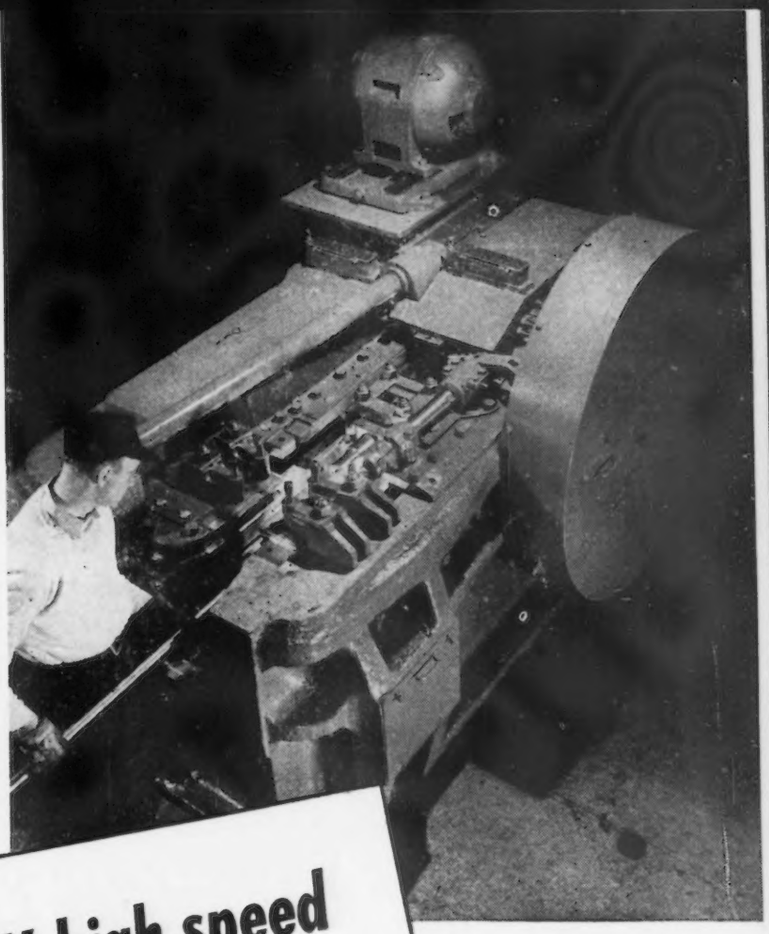
503—Lempco Products, Inc.
New high-speed punch press; Pressurematic press; multi-purpose grinder; dual spiral expansion reamers; die sets and press aligners.

415—Liberty Planers, Inc.
New, large double-housing heavy duty planer; double-housing planers; convertible planers; openside planers.

35B—Lift Trucks, Inc.
New twin front-wheel drive lift truck; electric lift trucks; hand lift trucks; metal pallets; skid platforms; drive parts; motors; controllers.

652—Link-Belt Co.
Power transmission equipment consisting of Electrofluid drive; motorized speed reducer; variable speed changer; ball and roller bearings; silent chain drives;





See Both the AJAX high speed FORGING PRESS and the AJAX FORGING MACHINE in Production at the MACHINE TOOL SHOW

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September 17, 26 Booths 640-682

★ This will be the first public showing of the new High Speed Forging Press which established and maintained new high production records during the war. This will be an opportunity to see in actual production both the Forging Press and the Forging Machine - to determine whether either or both would best meet your Forging Production Requirements. ★ If unable to attend the show, write for descriptive bulletins.

THE AJAX MANUFACTURING COMPANY

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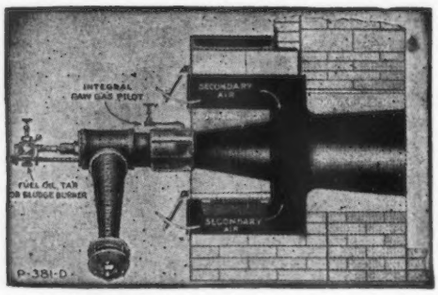
NATIONAL AIROIL FUEL OIL - GAS BURNERS



TANDEM COMBUSTION UNIT

maintains a high flame temperature with either fuel oil or gas . . .

and is easily "lighted off" in a cold furnace . . . with fuel oil or gas. It can be brought, quickly, to full capacity with a clean flame; has a high turn-down ratio with a steady flame; and can be applied to all types of boilers and process furnaces. The flame can be regulated and directed to uniformly radiate heat to the absorbing surfaces without flame impingement.

This Unit is also designed for firing vertically upwards and for forced draft preheated air when necessary.

For further information about Tandem Combustion Units, write

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INDUSTRIAL OIL BURNERS, GAS BURNERS, FURNACE EQUIPMENT

ROUSTABOUT CRANES

Photo courtesy Colorado Public Service Co., Denver

. . . give you fast low-cost materials handling in yard and plant, at big man-power saving!

● Rugged, maneuverable, the answer to efficient yard organization — make 2 men a whole crew, keep things moving, avoid costly delays. Ideal for hook or magnet loads to 7½ tons, built for years of overwork. Don't let *your* company miss the efficiency and profits of modern, mechanized materials handling with Roustabouts, now enjoyed by hundreds of leading industries. Write for the facts!

THE HUGHES-KEENAN COMPANY
571 NEWMAN STREET . . . MANSFIELD, OHIO

ROUSTABOUT CRANE

Roustabout Cranes
By Hughes-Keenan
Load-Handling Specialists Since 1904

Booth No. Exhibitor

roller chain drives; flexible couplings; other accessories.

403—Lipe-Rollway Corp.
Clutches.

312—Lodge & Shipley Co.
New engine, toolmaker's and manufacturing lathes; new automatic lathe; standard selective head and turret models.

113—Logansport Machine Co., Inc.
New air valves; hydraulic and air valves; cylinders; presses; miscellaneous equipment; power chucks; rotating cylinders for lathe applications.

611B—Louis Allis Co.
Rolled shell type, shaftless, squirrel cage motors; flanged mounted motors; rapid reversing motor; standard Ajusto-Spede; standard squirrel cage motors.

153—Lovejoy Tool Co.
Standard line of face milling cutters; new milling cutters; other standard and special tools.

39—Lucas Machine Tool Co.
Horizontal boring, drilling and milling machines with electronic control, and with electrical control; improved standard 3-in. spindle machine.

302A—Lufkin Rule Co.
Precision tools; measuring tapes and rules.

328-D—Macklin Co.
Various types of grinding wheels manufactured for machine tool industry.

450—Madison-Kipp Corp.
Lubricators: pneumatic air tools including air grinders; accessories.

35A—Mall Tool Co.
Pneumatic and electric saws for metal cutting; new electric drills; electric screwdrivers; electric sander; electric polishers; pneumatic and electric grinders.

156—Marlin-Rockwell Corp.
New sealed ball bearing with seals on one or both sides made of synthetic rubber with steel core.

328-H—Master Mfg. Co.
Self-powered lathe converter for use as independent unit or with lathes, milling machines, shapers, planers and boring mills.

14B—Matco Tool Co.
Universal collet head; all-angle vise; swivel milling vise; universal drill jig; universal angle plate; radius and angle wheel dresser; cam vise.

46—Mattison Machine Works
New precision grinders with hydraulic feed; new wide belt sheet grinding and polishing machine.

33-F—Merz Engineering Co.
Precision tools.

549—McGill Mfg. Co., Inc.
New cam yoke roller bearing; various types of ball and roller bearings.

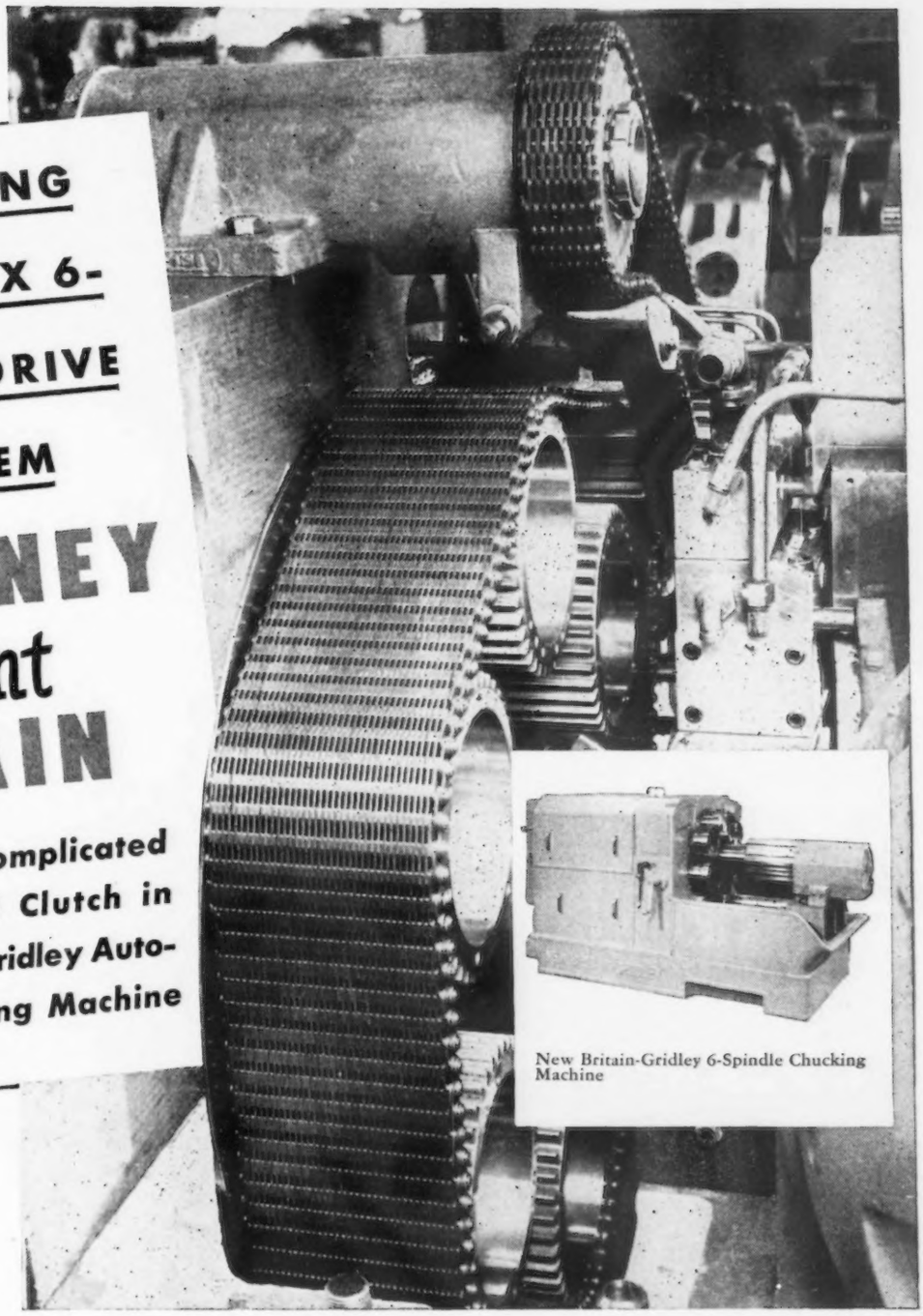
426—Michigan Tool Co.; Cone Drive Div.
New fan-cooled speed reducers; gearing for machines using carbide tooling; new cross-axis rotary gear finishers; gear cutting department in operation.

323—Micromatic Hone Corp.
New production microhoning machine; electronic control of automatic sizing on microhoning ma-

SIMPLIFYING A COMPLEX 6-SPINDLE DRIVE PROBLEM

WHITNEY Silent CHAIN

Eliminates Complicated Gearing and Clutch in New Britain-Gridley Automatic Chucking Machine



Whitney Silent Chain power drive and 6-spindle drive

New Britain-Gridley 6-Spindle Chucking Machine

For positive, uniform spindle speeds, New Britain-Gridley uses Whitney Silent Chain to drive the six spindles in their Model 16 Chucking Machine.

The spindles of this machine are mounted on a circular spindle carrier. Whitney Silent Chain operates on the sprocket portion of the spindles and meshes with each of the spindle drive sprockets. As the spindle carrier indexes, each spindle coming into the loading and unloading station disengages with the chain so the operator may chuck and unchuck the work piece.

After the piece is chucked, the carrier indexes the spindle into #2 position, the sprocket meshes with the continuously operating chain and the spindle begins to drive.

In addition to other advantages, this chain drive design made it possible for New Britain-Gridley engineers to eliminate the need for a clutch to stop the spindle as it indexes into the loading and unloading station.

Designers and builders can improve the performance of their machine tools and other equipment with Whitney chain and cut tooth sprockets. This *all-steel drive* delivers full rated machine capacity, withstands shocks and overloads and cuts maintenance costs. It pays to standardize on Whitney. Write for information, today.

The Whitney Chain & Manufacturing Company

HARTFORD 2, CONNECTICUT

DELIVER TOP TOOL ROOM EFFICIENCY

Whether you need a Universal Cutter and Tool Grinder or a Combination Tap and Drill Grinder, you can be sure of top tool room efficiency if they're Grand Rapids by Gallmeyer & Livingston Co.

With the Combination Tap and Drill Grinder you save three ways: 1. First cost, 2. Maintenance expense, 3. Valuable floor space.

Grand Rapids No. 60 Universal Cutter and Tool Grinder handles complex tool grinding jobs with maximum speed and convenience.

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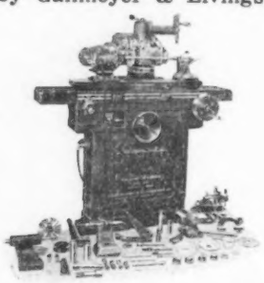
GL 8-46 for No. 10-B; 2-28-46 for No. 60



No. 60 Universal Cutter-Grinder

What "GRAND RAPIDS" Quality Means: Gallmeyer & Livingston cast their close-grained gray iron, machine to micrometric tolerances, precision-assemble grinding machinery of unsurpassed performance. *Grand Rapids* means *top* quality in grinding machinery.

GALLMEYER & LIVINGSTON COMPANY, 200 STRAIGHT ST., S. W., GRAND RAPIDS 4, MICH.

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BROWNING ELECTRIC TRAVELING CRANES FROM 3-TON TO 150-TON CAPACITY

Browning E. O. T. Cranes, with 47 years' experience behind them, are the expression of sound design and engineering. Throughout their wide range, girders, trolleys and other members are built with ample weight where needed. As a result, Browning cranes are well known for their uniformly dependable performance under severe operating conditions.

You cannot over-emphasize the importance of handling materials efficiently. That factor can create the difference between a manufacturing profit and a manufacturing loss.

May we look into this subject with you? Our analysis will be as thorough and as accurate as our long experience can make it. No cost or obligation is incurred, of course.

Send for 28-page Bulletin "X-9," newly off the press.

VICTOR R. BROWNING & COMPANY, Inc.
WILLOUGHBY (CLEVELAND), OHIO
Designers and Builders of All Types and Capacities of Electric Overhead Traveling Cranes and Hoists and Electric Revolving Cranes

NEWS OF INDUSTRY

Booth No. Exhibitor

chines; new honing tool and head for automatic control of finished bore sizes.

128—Moline Tool Co.

Improved straight-line driller; universal joint-type driller; precision cylinder boring machine; two-spindle horizontal machine arranged to drill holes in railroad track ends.

208—Monarch Machine Tool Co.

Manufacturing lathe with high-speed air drills; electronic controlled hand-screw machine; sensitive precision toolmaker's lathe; 27 other turning tools.

120—Morton Mfg. Co.

New keyway cutter and slotting machine; finished machine keys; photos of draw cut machine tools; new hydraulic flash trimmer.

658—Nathan Manufacturing Co.

Valves, gages, pumps.

628—National Acme Co.

New multiple-spindle bar automatic; new single-spindle chucking machine new thread and form rolling machine; new self-opening Vers-o-tools with adjustable blade chasers; new chronologs for idle time control.

4—National Automatic Tool Co.

New Boreface; light sensitive multi-spindle tapper and driller; new cam feed machine; new deep hole driller.

607—National Broach & Machine Co.

New diagonal shaving machine; new rotor shaving machine; gear lapping machine; gear sound testing machine; gear checking machines; broaches.

621—National Industrial Launderers and Cleaners Assn. c/o The Sani-Clean Service, Inc.

Industrial uniforms and shop wiping cloths for machine tool industry.

17—National Machinery Co.

New automatic hollow rivet header; latest double stroke solid die cold header; boltmaker; new automatic cold nut former; precision nut tapper; high-duty forging machine; high-speed forging press.

311—New Britain-Gridley Machine Div., The New Britain Machine Co.

New line of multiple spindle automatic screw machines; new automatic turret lathes; new double-end chucking machine; new counter boring and turning machines.

604—New Departure Div., General Motors Sales Corp.

Ball bearings used in new machine tools showing accuracy of tolerances, high speed and rigid support features.

37A—C. A. Norgen Co.

New transparent plastic bowl air filters; combination purifier and standard pressure regulator with gage for spray rooms; high-speed spindle lubrication unit.

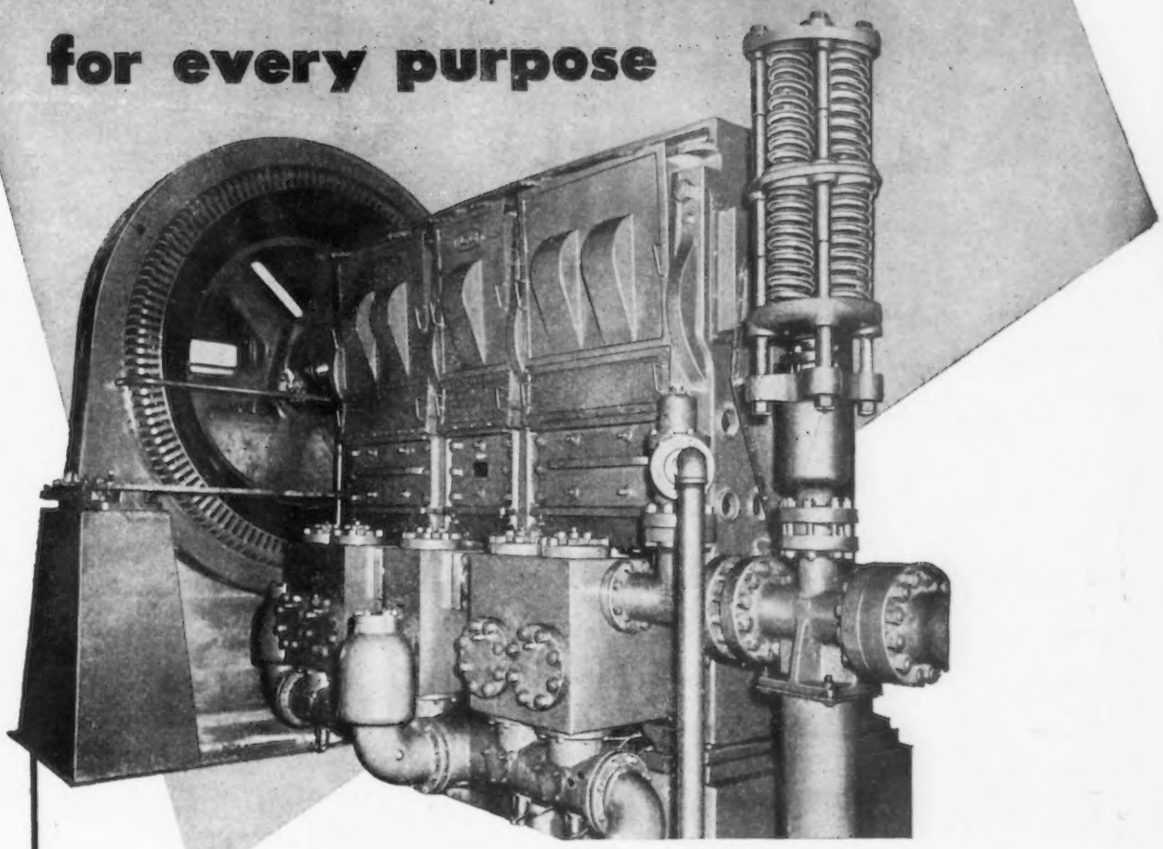
313A—Norma-Hoffmann Bearings Corp.

Line of ball bearings, roller bearings and thrust bearings including sealed cartridge bearing.

5—Norton Co.

New cylindrical grinders; simplified surface finishing machine; lapping machines; new hydraulic surface grinder; cutter and tool grinder; new universal grinding machine; new design tool grinder.

there's an ALDRICH PUMP...
for every purpose



Regardless of pumping problems, pressures or capacities—Aldrich has a pump to meet your individual requirements.

Your answer may be the ALDRICH-GROFF "POWR-SAVR"—a variable stroke, constant speed, variable capacity pump built to handle any free flowing liquid and to provide working pressures up to 15,000 psi with minimum power consumption.

Or, an Aldrich Inverted Vertical Triplex, Quintuplex or other Multuplex Pump, with constant stroke and varying forms of drive, may better fit your job.

In any case, one of the many types and sizes of Aldrich Pumps will meet your needs just as efficiently as the Aldrich Vertical Quintuplex Pump, above, meets its owner's requirements.

With a 600 H. P. motor mounted directly on the crankshaft to eliminate reduction gears, this pump supplies high pressures for hydraulic forging and draw bench work—economically and with maximum efficiency.

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Alloy Steel Service from Seven Warehouses!

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DOWN WITH HANDLING COSTS

One way to hold prices down is to cut handling costs. Mechanize! Replace obsolete handling methods. ***KRANE KAR*** does the work of 6 to 8 men, handles materials for as little as 8¢ a ton.* A user reports: *"KRANE KAR* has cut our labor costs on the average about 75%."

KRANE KAR *Lifts, Swings, Carries, and Places* loads of any shape or size up to 10 tons. Loads and Unloads freight cars, trucks, trailers, barges . . . Tiers, Stacks, and Stores materials inside the plant or in the yard . . . speeds Plant Maintenance and Repairs. 9 to 37 ft. booms or adjustable telescopic booms; pneumatic or solid rubber tires; gasoline or Diesel. Electric magnet, clamshell bucket, and other accessories available. Ask for Bulletin No. 69.

USERS: Bethlehem, Boeing, Carnegie-Illinois, Chrysler, U. S. Steel, duPont, General Motors, Pullman Standard, etc.

*Case histories available on request.

THE ORIGINAL SWING-BOOM MOBILE CRANE
WITH FRONT-WHEEL DRIVE AND REAR-WHEEL STEER
1¼, 2½, 5, AND 10 TON CAPACITIES
KRANE KAR
TRADE MARK REGISTERED
SILENT HOIST & CRANE CO., 851 63rd ST., BKLYN 20, N.Y.

NEWS OF INDUSTRY

Booth No. Exhibitor

317G—Oakite Products, Inc.
Soluble oil for making up coolants; addition agents used in cutting emulsion formulae; Bactericide for sterilizing lines in recirculating systems; special protective oil for rust prevention.

440—Oilgear Co.
Vertical Cyclomatic broaching machine; double-slide vertical surface broaching machine; 2-way variable speed transmission; feed pump; directional control valves; samples broached on machines.

650—O. K. Tool Co.
New carbide-tipped dual adjustable face milling cutter; alternate angle, half side, interlocking and straight blade milling cutters; special multiple operation boring heads; tool holders and tool bits; gang milling sets.

435—Oliver Instrument Co.
New tool bit grinders; new design drill point thinning machine; hydraulic automatic face mill grinder; tool and cutter grinders; heavy duty and small pedestal die making machines; drill pointers.

13A—O'Neil-Irwin Mfg. Co.
New rod parter for shearing wires, rods and bars; new notching shear; other dieless duplicating units including benders, brakes and shears.

37-D—Orlandi Gear & Machine Co.
New gear checker; standard and special gear checkers for checking pitch diameter with pins.

634—Oster Mfg. Co.
New automatic cycle lathe; improved turret lathe, pipe and bolt threading machines.

445—Owens-Corning Fibreglas Corp.
Fibreglas insulated motors for nonferrous metalworking; insulated fractional hp torque motors for stall-duty applications; electrical insulation materials for machine tool applications.

302D—Parker Appliance Co.
Scale model of new machine designed to offer problems in laying out and servicing flexible tube hydraulic or lubricating systems.

243-A—Parker-Kalon Corp.
Set screw, cap screws.

144—Peerless Machine Co.
Automatic power saws, plain metal saws, new saw blade grinder.

563—Physicists Research Co.
New mechanical electronic shop instrument for recording profile of machined surfaces; new instrument for obtaining quality rating of assembled ball bearings; new race tester for measuring surface waviness of bearings; new rotary piloting fixture for circular tracing with Profilometer.

18—Pines Engineering Co.
Improved automatic hydraulic bending machines bending steel tubing on production work.

35F—Pioneer Pump & Mfg. Co.
Coolant pumps in vertical and horizontal models for outside or tank installation.

408—Plan-O-Mill Corp.
New planetary milling machine; with auxiliary equipment and parts milled; photos of form and thread milling machines.

It's sooner than you think...
...when you may step out of an aluminum house...
...to commute on an aluminum bus...
...to work in an aluminum office building...
...then home to relax on aluminum furniture...
...or work in the yard with aluminum tools!
More and better aluminum products—today...with
Kaiser Aluminum
a Permanente Metals product

What things do you think of when we say "aluminum"?

When asked that question in a recent survey, 92% of the people interviewed replied: "Pots and pans."

On the other hand, *less than 4%* mentioned such aluminum "naturals" as roofing and siding, heating and ventilating equipment, gutters and down-spouts, busses, garage doors, garden tools, home-trailers.

What does this mean?

Simply that while aluminum has proved itself the successor of other metals in hundreds of applications . . . public awareness has largely remained at the pot-and-pan level.

And without awareness, how can there be *demand?*

To increase consumer awareness of aluminum products . . . to interpret them in terms of *better living* and thus create demand . . . is the objective of the above advertisement and the many that will follow.

They will appear, in full color, in such top-read magazines as Saturday Evening Post, Newsweek, Collier's, Time, Sunset, reaching a total audience of over 30 million every month! Such advertising, we believe, is bound to influence the buying habits of a big share of this audience.

Which will mean a lot more business for the makers of aluminum products.

Ready to serve you—*today*...

Kaiser Aluminum

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DISTRIBUTED BY PERMANENTE PRODUCTS COMPANY, KAISER BLDG., OAKLAND, CALIFORNIA . . . WITH OFFICES IN:
Seattle, Wash. Oakland, Calif. Los Angeles, Calif. Dallas, Texas Wichita, Kan. Kansas City, Mo. St. Louis, Mo. Atlanta, Ga. Minneapolis, Minn. Milwaukee, Wis. Chicago, Ill. Cincinnati, Ohio Cleveland, Ohio Detroit, Mich. Boston, Mass. Hartford, Conn. Buffalo, N. Y. New York City, N. Y. Philadelphia, Penn. Washington, D. C.

YOUR NAME'S IN THE POT

When you order STRENES METAL dies from us, they are distinctively yours in metallurgical structure.

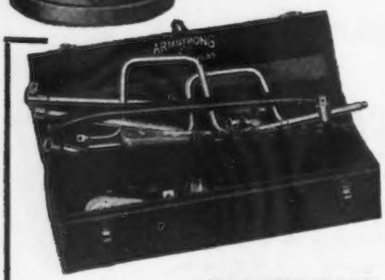
By varying cupola changes, we are able to give each batch of STRENES METAL special characteristics in respect to hardness, toughness, density, temperability, acid resistance, magnetic qualities, etc. Knowing the drawing and forming problem, we mix the ingredients of STRENES METAL to meet the requirements.

This explains why STRENES METAL dies deliver an extraordinary number of stampings between redressings, thereby greatly cutting maintenance and production costs.

It will pay you to find out how the advantages of STRENES METAL dies are applicable to your drawing and forming operations. Ask us for specific information.

THE ADVANCE FOUNDRY CO.
100 SEMINARY AVE., DAYTON 3, OHIO

STRENES METAL
DRAWING AND FORMING DIES



ARMALOY SOCKET WRENCHES

Armaloy Socket Wrenches are made of a selected grade Alloy Steel, heat treated, gauged to closest tolerance and beautifully finished in Chrome Plate.

Furnished in five sizes: 1/4", 3/8", 1/2", 3/4" and 1" square drive with a complete assortment of drop-forged ratchets and driving units.

Cataloged, Stocked and Sold singly or in sets by leading Industrial Distributors everywhere.

1947 Machine Tool Show
Booth No 406

ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"
309 N. Francisco Ave., Chicago 12, U. S. A.
Eastern Whse. & Sales Office: 199 Lafayette Street, N. Y. 12, N. Y.
Pacific Coast Whse. & Sales Office: 1275 Mission Street, San Francisco, California

NEWS OF INDUSTRY

Booth No. Exhibitor

442—Portman Machine Tool Co.
New small 1-hp hydraulic variable speed transmission; optical comparator; optical projector.

43—Potter & Johnson Machine Co.
Automatic turret lathes, four equipped with special tooling in operation, two new models.

55—Pratt & Whitney Div., Niles-Bement-Pond Co.
New jig grinder; Keller machines; die sinkers; precision toolroom lathes; automatic production machines; precision jig borers; vertical shaper demonstration; thread milling and hobbing demonstration; grinding teeth in large precision gears; vertical surface grinder; bench precision machine tool.

37C—Precise Products Co.
Milling with tungsten carbide cutters; grinding at 40,000 rpm; deburring, finishing and polishing to mirror finish; portable electric handtool; flexible shaft attachment; vari-speed lathe; other special units.

328-B—Purolator Products, Inc.
Oil lubrication units, hydraulic circulation units.

443—Racine Tool & Machine Co.
Automatic stock feed machines; single purpose maintenance and tool room machines; single purpose production machines; hydraulic pumps; valves and controls; railway maintenance-of-way equipment.

657—R & D Toolholder Corp.
New holders for production screw machines planers, boring mills and shapers; standard and cut-off tool holders.

40—Reed-Prentice Corp.
Lathe with new treatment of bed ways; die casting machine; electronically controlled universal head vertical milling machine; vertical milling machines.

317F—Reeves Pulley Co.
Variable speed units in operation including transmission, motor pulley and motor drive types.

233—Rehnberg-Jacobson Mfg. Co.
Drill and tap units, special horizontal drilling, boring, facing and tapping machine.

456—Reid Bros. Co., Inc.
Surface grinders.

302C—Reliance Electric & Engineering Co.
Specialized electrical equipment incorporating new developments and improvements; squirrel-cage ac motors; electric adjustable speed drive system for ac circuits.

317-C—Republic Drill & Tool Co.
Twist drills and cutting tools.

28—Rivett Lathe & Grinder, Inc.
New precision toolroom grinder; new precision toolroom lathe; new precision cabinet lathe; new precision cabinet turret lathe; New watchmaker's lathe; internal-external grinder; universal grinder; precision screw cutting lathe; production accessories.

526—Rockford Machine Tool Co.
New high-speed hydraulic shaper-planer; new openside shaper; heavy duty hydraulic double-housing and openside planers; new precision stroke hydraulic shapers; hydraulic ram-type shaper; hydraulic slotters.

Booth No. Exhibitor

641—Rodgers Hydraulic, Inc.

13-B—Roller Bearing Co. of America

Needle bearings, aircraft bearings, roller and cam followers, heavy duty bearings and assemblies.

313B—Ross Operating Valve Co.

Pilot operated solenoid control valves; special cylinder head valve; independently controlled solenoid pilot type valve; foot treadle-hand lever valve; 4-way hand valve; air controlled master and pilot valves.

34C—Royal Oak Tool and Machine Co.

Grinder fixture and tools ground; radial form relief demonstration; chuck for holding tools used in place of machine collets.

663—George Scheer Co., Inc.

New optical comparator; new small toolmaker microscope; line of precision inspecting equipment including comparators, gage blocks, snap gages, micrometers and special shop equipment.

647—Geo. T. Schmidt, Inc.

Hydraulic marking machine with chute feed for marking round parts and flat surfaces.

3—Seneca Falls Machine Co.

New automatic lathes equipped for various operations; automatic drilling and centering machines; automatic work driver equipped with new design work jaws having angular serrations.

33B—Severance Tool Industries, Inc.

Operation of carbide midget mills, tube deburring cutters, chatterless countersinks, drill-reamers and micro-mills; display of this and other equipment.

202—Sheffield Corp.

New and standard machine tools; gages; precision measuring instruments; engineering and contract service work; taps; dies, keyway cutters; threading tools and tooling; thread chasers; die heads; collapsible taps.

16—Sidney Machine Tool Co.

Engine lathes and tool room lathes.

401—Size Control Co.

Advanced gages including plug and thread types, snap and ring types, and Norbide gages; recently developed centerless lapping machines.

666—SKF Industries, Inc.

Precision antifriction bearings for machines equipped with carbide-tipped tools; ball and roller bearings in machine tools; oil mist lubricator for spindle bearings.

638—Skinner Chuck Co.

Chucks, rotating and nonrotating air cylinders, crank handle milling machine, vises, solenoid valves.

665—Smith & Mills Co.

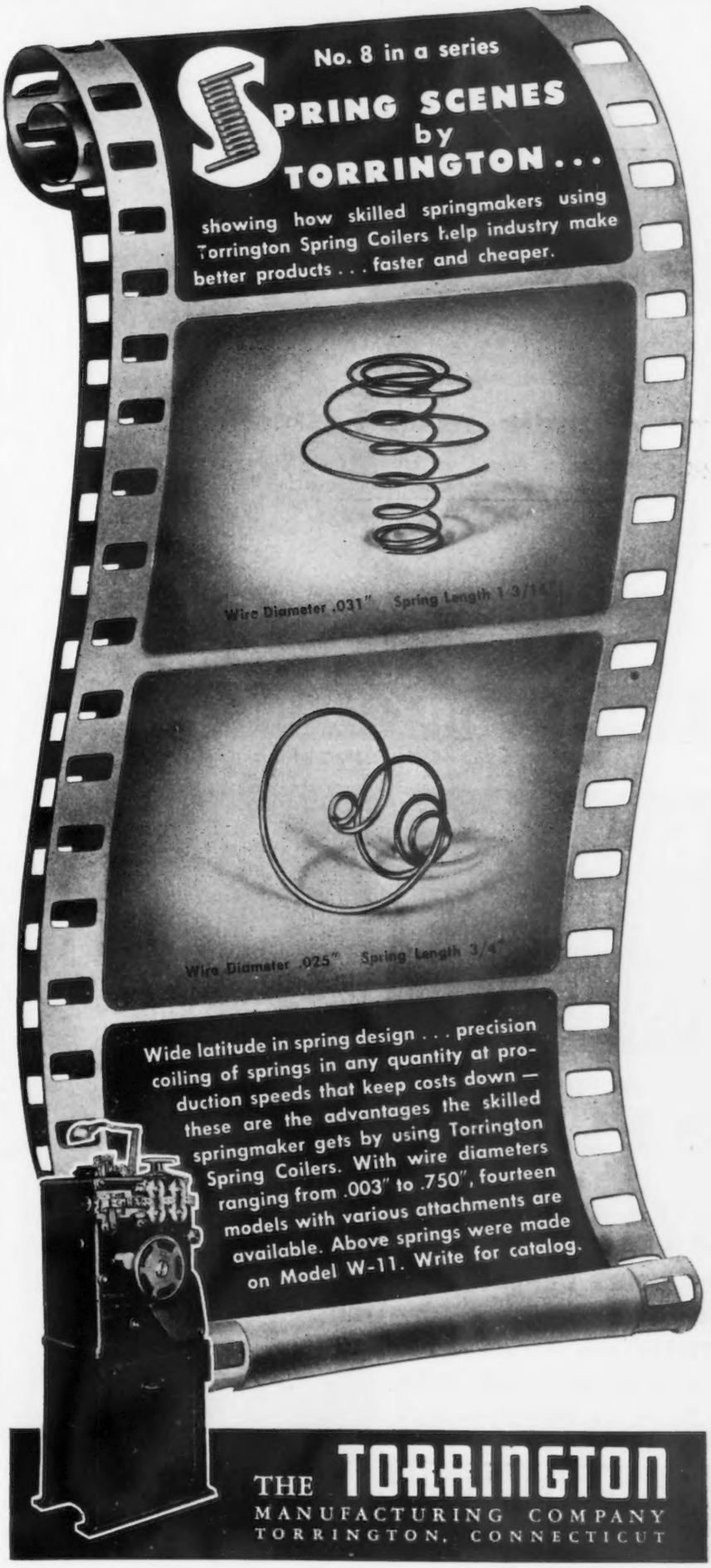
New 25-in. shaper; with slotless type ram; standard grinders and buffers.

33—Socony-Vacuum Oil Co.

Facilities for discussion of problems of plant lubrication and metal processing and engineering and service aid to exhibitors.

436—Springfield Machine Tool Co.

Engine lathes; straightening presses; hydraulic grinders; spindle and axle boring machines; special machinery.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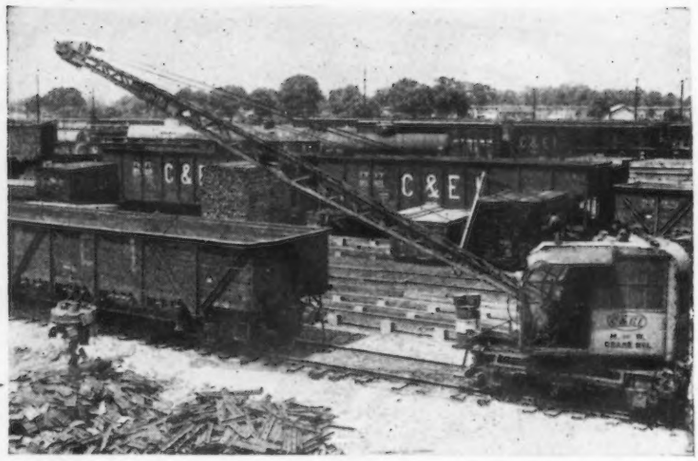
SPRING SCENES by TORRINGTON . . .
showing how skilled springmakers using Torrington Spring Coilers help industry make better products . . . faster and cheaper.
Wire Diameter .031" Spring Length 1 3/16"
Wire Diameter .025" Spring Length 3/4"
Wide latitude in spring design . . . precision coiling of springs in any quantity at production speeds that keep costs down — these are the advantages the skilled springmaker gets by using Torrington Spring Coilers. With wire diameters ranging from .003" to .750", fourteen models with various attachments are available. Above springs were made on Model W-11. Write for catalog.
THE TORRINGTON
MANUFACTURING COMPANY
TORRINGTON, CONNECTICUT



Handle Scrap *Faster—Easier*

This Burro is handling scrap faster and easier because it moved itself and several cars to the job quickly—and started work without delay. Burros equipped with magnet, clam-shell bucket, dragline bucket, tongs or hook are saving time and money on many jobs in every type of industry. Their powerful draw bar pull (7500 lbs.) and fast travel speeds (up to 22 MPH) make them efficient switch engines too — you can spot cars where and when you want them at a moment's notice. There's no waiting time when a Burro is on your track.

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CULLEN-FRIESTEDT CO., CHICAGO 23, ILL.

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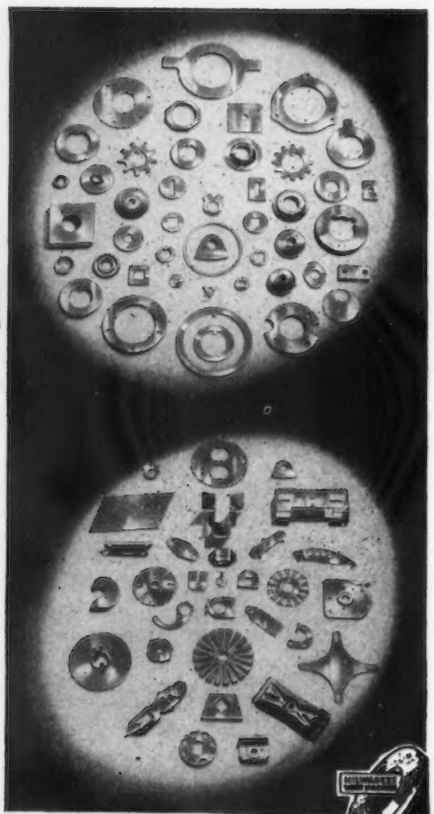
60 YEARS OF SERVICE to INDUSTRY



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WASHERS

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OF EVERY DESCRIPTION FOR EVERY PURPOSE... UTILIZING MORE THAN 22,000 SETS OF DIES

Let Us Quote On Your Needs!

WROUGHT WASHER MFG. CO.

THE WORLD'S LARGEST PRODUCER OF WASHERS

SINCE 1887

2202 SOUTH BAY STREET • MILWAUKEE 7, WISCONSIN

NEWS OF INDUSTRY

678—Square D Co.
Control station arranged to show control elements functioning; new design power distribution and electrical control devices; new electronic resistance welder control; full scale models of special control panels.

40B—Standard Oil Co.
Cutting oils; coolants; drawing and stamping compounds; hydraulic fluids; lubricating oils; greases; discussion of problems concerning use of cutting oils coolants and machine tool lubrication.

47F—Staples Tool Co.
Expanded line of Carboloy cemented turning, boring, facing and roller turning tools; milling cutters; form tools; centers; masonry drills; also standard and special single point and circular tools.

200—L. S. Starrett Co.
Mechanic's hand precision tools; dial indicators; hand and power hack saws; band saws for metal cutting; wood and plastics; steel tapes; precision ground flat stock.

677—Stearns Magnetic Mfg. Co.
New disc brake for fractional hp motors; general line of disc brakes; frictional control devices; magnetic separators and pulleys, lifting and suspended magnets and other magnetic equipment in photographs.

54A—Sterling Bolt Co.
New discount calculator for free distribution; illustrations of bolts, nuts, screws, rivets and washers.

317L—D. A. Stuart Oil Co.
Samples of center point lubricant; solutions of production problems in metalworking plants with display of typical parts machined; data on operations performed, machines and tools and use of oils.

20-21—Sundstrand Machine Tool Co.
New automatic lathes; new and special automatic milling machines; new drilling and centering machine; hydraulic transmission equipment and pumps; displays of standard hydraulic equipment.

644—Sun Oil Co.
Fountain displays of new grades of cutting oils; how lubricating oils are tested for resistance to corrosion and sludging; service station for tool exhibitors.

676—Super Tool Co.
Standard and special carbide-tipped cutting tools; ejector type tools; threading tools; reamers; saws; counterbores; solid carbide drills; tipped drills and tool bits; straight, offset and vertical Ejector type tools in operation.

34B—Synthane Corp.
Laminated and molded-laminated products; electronic device for comparing metal and plastic gear noise.

601—Taft-Peirce Mfg. Co.
New precision grinding developments and an air gage of improved design. Chucks and tool room specialties will also be shown.

623—Taylor & Fenn Co.
New small automatic forming and drilling machine; new automatic 2-spindle drilling and milling machine.

13C—Texas Co.
Cutting coolants for machining metals; hydraulic fluids for machine tool operation; cutting coolants and hydraulic oils flowing through illuminated lucite channels.

(*Continued on Page 289*)

Special Report . . .

Scribe Muses About Zany Steel Supply Angles

Anyplace, U. S. A.

• • • **Why I should live so** long as to get mixed up in the scrap market, even my best friends won't tell me. In fact, scrap is why I at present have no friends, which grieves me no end, as I am inherently a very sociable fellow, entirely free of animosity and normally intent on letting live as long as everyone else feels likewise. However, I find in the scrap business this is a difficult role and this particular day I am in Rudy's pursuing my profession with a few suds and pretzels on the side.

My presence in Rudy's is entirely due to the man with whom I am talking and we are simultaneously bending the right arm and in general discussing trade conditions. He is a first rate scrap man who somehow knows the new price long before most people do. He on occasion uses this occult power to augment the funds he is setting aside for his dotage. In fact, so well does he use his noggin and thereby increase the fund that everyone says he must be warped, as no normal homo could be so smart. Some go a little further and say he should be astride a five gaited animal fully equipped with the usual standard trappings normally associated with characters whose intent it is to accumulate wealth by fast and unmannerly methods. Now I always give full credit to anyone successful, so for my money he deserves all the cabbage he can get, as I know my acquaintance employs entirely legal means in his business and can in no way be classified as an unmannerly equestrian.

On occasion, in my contacts with the scrap profession I need consultation. In fact, should you overhear what some of my colleagues yell in their telephones, I need complete psychiatric examination. Of course, the same gentlemen who so strongly suggest that my published price is a figment, which they know is wrong, the week before didn't have any idea what it was when I asked them.

My scrap friend is philosophizing on the utter lack of ethics practiced in many of the current scrap negotiations. He said it is bad enough that supply and demand and bulls and bears get so screwed up. This I understand, but when he says now we have variables like sheets and ingots, things are in such a horrible state he thinks he will quit. This strikes me as very serious because if he is so discouraged, the rest of the boys must have one hoof in the 6 ft long hole and the other on a grape skin. I am not exaggerating as I know my friend is always long or short at exactly the right time, which is the same as having free use of one of Uncle Sam's printing presses.

Editor's note: This story was written by one of our editors who did not think that it would be published. It is about 90 pct fact and the rest fiction and light handling. We run it without the editor's name or the names of his contacts. It points up in an amusing manner a serious situation which has occurred and does occur in the scrap and steel industries.

Although I am at Rudy's so as to eventually learn the news of the scrap industry, I am not against learning about sheets and ingots and such things, so I ask what is the pitch. Well, this guy says his business should be restricted to junk. I say the stuff should be reclassified, as it is not junk in any sense of the word, particularly when he can sell it for $40. He asks net or gross? I say what the hell—and he waives the slight technicality.

He asks Rudy to repeat his standard motions and getting closer he whispers, "This is off the record." I indicate confidential and he starts by telling me the reason we have such a fantastic scrap price is not pure supply and demand. He wants to know if I know what sheets are selling for on the back sidings. I nod and he demands I should tell him where they come from. I start to say but he goes on to state that exchange rates on sheets and scrap have been arrived at by so many people that "Pittsburgh Plus, or minus" is no better than present basing points. This, he says, isn't too bad, but when the steel consumer starts to get sheets by first begetting himself some scrap so he can secure ingots which gives him slabs and finally sheets, osmosis has really set in.

How can he sell short he wants to know when every spare ambulance chaser in the country forgets all about habeas corpus and starts chasing scrap, ingots and cold-rolled sheets all over everywhere but the part of the globe where FDR allowed Cousin Joe to fence. By now he is hitting on all six, his manner is losing all reserve and in a loud voice he asks how can a reasonable price be held on melting steel when everybody knows that unless large short sales can be filled there won't be any, and if there isn't to be any short sales every order is a no-good proposition the moment it is made.

This is a little too fast for me to follow but I nod and say where do the ingots fit in. He starts to back away so that he can wave both hands and then looks at his watch. He suddenly says I should come with him and I'll see. This procedure is highly unusual, so we get a cab right quick and I start to wonder if the home office has unattended teletype service.

On the way my friend says he will shortly prove three things. First, that most of the conversion experts are fakes; second, they don't know their posteriors from a soaking pit, and third, such deals should not go through a scrap source or anyone else as such practice is basically unsound. He goes on to say that he is desirous of clarifying the picture for me and thereby prove that consumers of steel and their henchmen should not tamper with the usual supply channels, be it scrap or new steel, as in so doing they gum up the whole works and if we aren't careful the bureaucrats are bound to step in when the confusion gets bad enough, at which time he shouts we will have to give everything

back to the Mohawks and start from scratch.

This is so much food for thought, I am trying to figure if I can get the home office to give me the whole news section, plus the editorial page next week.

As we get in the elevator he informs me he is going to act interested in any deal the fellow who is waiting for him has to offer. He says he will go along just so I can appreciate the point he tries to make at Rudy's. And last he says he has no intention of getting into the gray market or conversion deals and when he pretends to be interested I know it is purely for my benefit. I caution that there is no need for him to become completely unmercenary and he counters that he is a scrappie and is going to stay that way if the producers and consumers of steel will leave him alone. He says no real scrap man wants to get involved, as that isn't Hoyle, and that when this is over he still wants to be in business. He goes further and says if the thing spreads any more everyone is going to have to take a Dale Carnegie course to get their foot back in the right doors.

We shortly get to his office and I sink up to my arches in the new rug recently installed. My pal says I should sit still, keep quiet and just listen, as he thinks I don't believe what he was talking about in the first place.

He hits the buzzer and the cupcake outside ushers in a tall gent who I noticed was in the lobby when we came through. This long drink introduces himself as says he has come from the East to discuss the steel situation. I want to ask him to spell it but my friend says just what steel situation and the visitor says sheets.

Well that seems like a popular item for discussion and before I can catch myself I say what kind of sheets. The visitor, whose card pronounces him an LLD, expresses surprise and alleges he wasn't aware of any variety in the sheet species. My scrap friend hangs on to the desk, gives me the "what did I tell you" glance. By now the doctor of things legal is staring at me and in a "Who's this jerk" manner, so my friend says it's OK and that the New Yorker should feel free to spout to his heart's content.

He starts by saying he has 25,000 tons of sheets. The scrappie wants to know how this matter involves him and the visitor says the lever is scrap. My friend says he has plenty of company as everyone needs scrap and it is slowly driving all people involved crazy. The New Yorker encounters that sure people need scrap but wouldn't he like to get some sheets with which he could dicker to get almost anything else. Neither of us say anything and I am watching closely for reactions. Finally my friend asks the tall one to give full particulars so we can review the deal from a mutual standpoint.

The visitor says he knows a man who has a cousin who has a connection who can get 25,000 tons of sheets, part of which his principal is willing to bargain for scrap. Once again I get the glance, the visitor gets a little bit more uncomfortable and my friend gets outwardly more uninterested. The scrappie says first, the good doctor says he has sheets and next, he says he can get them. Please, if he doesn't mind, we would like to clarify that point. I think the conflab is about to break up when the visitor mentions the name of a guy we both know is a big wheel in the sales division of a mill. At this point the scrappie gets so interested that I start to suspect that he may be considering an immediate alteration of his business ethics which he so recently outlined to me.

My friend promptly hands the eastener a phone and says call this guy and just ask to speak to him. If he answers invite him to dinner or tell him your troubles or tell him anything. All he wants to know is does the LLD have the right "in." To our surprise, the visitor calls the big wheel, gets through the secretary and is conversing at a fast pace about their last golf game. That's enough—the scrappie pushes the buzzer, gets out a clean pad, produces a pencil and waits for the call to end.

OK, the visitor says, the ingots will be shipped in 30 days and by Saturday he will have the first car number. The scrappie drops the cigar, takes out a cigarette and tries to use it to light a match. All the time I am wondering if I'm going wacky, as try as I will I can recall no previous mention of ingots. Finally my friend gets himself under control and says let's go over this slowly, please. He recalls that the good doctor first mentioned 25,000 net tons of sheets—first firm, later willynilly, and now out of the blue he is talking the same tonnage of ingots. Who is crazy or has the doctor inadvertently misphrased himself?

With this the easterner retorts that even a shoe clerk knows what comes first and that naturally the doctor is following the standard procedure. At this point I get out of hand and counter, "Sure, but where does conversion take place, is it arranged for and, if so, can he tell us how he can get 25,000 net tons of sheets out of the same tonnage as ingots?" I figure maybe some smart alchemist has a new process, which of course would make a very fine yarn in our technical section. Finally we get the whole story and find the easterner has lined up another mill to convert, and that the loss in conversion will be taken care of by his principal, who will remunerate all parties on the just and equitable.

My friend is now so engrossed that he is scratching his initials on the top of the mahogany desk which he won't allow a drink on. Finally he says to the doctor, "How much for the scrap?" The expert says going prices as of shipping date. I am expecting the scrappie to ask me to leave at any minute but he just goes on and asks how much will he have to pay for his cut of the sheets and exactly how many sheets does he get. The visitor says he will get 10 pct of the sheet tonnage and the ingots will cost $50 over the scrap price, the slabs $35 more to convert and the sheets go at the published price. Again we go through the usual net and gross interrogation and the scrappie now has a slipstick which he is manipulating. I am trying to figure in the head and finally decide we will need a pari-mutuel machine to give us the whole story, freight rates and all.

Things look rosier by the minute as this ex-ambulance chaser says he has even arranged for his principal to pay all invoices direct and that a straight, clean-cut separate deal will take place when the scrappie gets the bill

of lading on the sheets. Again my friend hands him a phone and says before we go further the good doctor should pass the time of day with the converting tie-in on the long distance. Again he startles us by quickly placing the call and chats amiably with the person we all know who runs a very sizable works in which the making of steel is a specialty.

By now we are in a fever pitch with irrevocable letters of credit, sight draft, shipping destinations, etc., whirling madly about. I can see that my friend is very much impressed, as he has so often been approached by just such guys but with no ultimate result, net or gross, ever materializing. I start to again suspect that perhaps he has seen the light and the trading possibilities with the sheets have been too tempting to resist.

Just as we are about to go down to lunch it occurs to me that this guy has so many connections he must be representing a big outfit whose name as yet has not been mentioned. Out of curiosity I inquire as to what product will be made from the sheets, as I figure a good angle on the product will be a tip-off to the consumer whose front has been so persuasive. The visitor answers, "An automobile." This doesn't make sense, so I lead him on with "Yes, automobiles, but what automaker?"

At this point my friend interrupts and requests that the doctor step out for a second as a breather is in order. He does and the alert one says to me, "Well?" I wag my pin sideways—for once I am speechless. The scrappie asks me if in my studied opinion this deal is level. I say "Yes," and he smiles and says "It can't be." To this I take violent exception and start to walk around but he stops me and says I should think harder. What, he asks, does the good doctor get for all his trouble. The scrappie hands me his piece of paper. There is the very intricate channel of movement—who does what to whom with which, and sure enough nowhere is there a line that indicates any reward going to the LLD, monetary or otherwise. This, I say, can't be. The scrappie says, "Quite true," but just to sew up his thesis we should develop the missing link. So via the buzzer the philanthropist again delivers himself to the middle chair.

We don't say a word but just put the "what's your cut" stare on him. He is sitting there looking at first one and then the other and we continue to ogle him, first top to bottom and then sideways. Finally he says, "Look, boys"; he is an ex-G. I. The scrappie says he should get another medal for this deal. Our visitor goes on to say he has dreamt of this in and out of foxholes for 4 years. He has waited and worked ever since VJ-Day and has used the top crust of his influential friends and pulled more strings than a guy running a puppet show and now he finally has it lined up.

This sounds so big that I think maybe we have something for an enterprising and investigational senator and I start to wish I never went to Rudy's at all, as my boss dislikes the idea that maybe one of his reporters should be a witness or accessory or anything even resembling such things. We continue to stare. Finally I can see by his facial expression that he is convinced he must disclose exactly what is his cut or angle else the deal falls through. I am watching him closely and he suddenly begets himself a shining countenance, jumps up and says, "Yes, sir, the minute the final car of sheets is consigned to the Seeing Eye Headlight Co., so that they can continue to make parts, the PA who owns the local dealership will give him that new car."

1947 Machine Tool Show

(CONTINUED FROM PAGE 286)

33-D—Thomas Hoist Co.
Industrial hoists.

114—Thompson Grinder Co.
Heavy duty hydraulic surface grinder; new crushed wheel grinding machines; hydraulic surface grinder; dovetail way grinder; all machines in operation.

444—Threadwell Tap & Die Co.
Taps; dies; drills; counterbores; keyway cutter sets; screwplates; arbor presses.

317D—Timken Roller Bearing Co.
New design bearings; new type of graphitic steel for lathe ways.

453—Twin Disc Clutch Co.
Small hydraulic coupling and cutaway model; four other models; line of single and duplex machine tool friction clutches; clutches including an air actuated type.

125—Union Mfg. Co.
Manually operated chucks; manually operated chain hoists; new electric self-centering chuck.

619—Universal Boring Machine Co.
Boring, milling and drilling machines; accessories.

34—U. S. Electrical Motors, Inc.
Working and cutaway model of new motors with variable speed; synchrogear motors; horizontal motors; hollow-shaft motors; motor gears.

236—U. S. Tool Co., Inc.
Machine performing trimming, piercing, shearing, cut-off and forming operations; horizontal automatic stock reel; automatic rotary cutting machine.

150—V & O Press Co.
High-speed notching press with new type friction clutch and improved braking mechanism.

9—Van Norman Co.
Latest design ram type milling machines; latest design horizontal type milling machines.

317-J—Vascoloy-Ramet Corp.

402—Veeder-Root, Inc.
Mechanical and electrical counting devices.

228—Vickers, Inc.
New equipment including hydraulic variable speed transmission; proportional oil filter; traverse and feed cycle control panel; hydraulic power unit; hydraulic control valving panel assembly.

224—Vinco Corp.
Hob grinders; dresser, involute checker, gear rolling inspection fixture; new indexing fixture.

154—Wallace Supplies Mfg. Co.
Bending machines.

309—Warner & Swasey Co.
New ram-type turret lathes; new universal saddle type turret lathes; new precision tapping and threading machines; new electric turret lathe; new hydraulic bar feed and collet chuck; new multiple spindle automatic; new electro cycle turret lathe; new single spindle automatic chucking machine.

328A—Warner Electric Brake Mfg. Co.
New line of electric brakes and clutches for industrial applications.

483—Weddell Tools, Inc.
Inserted blade cutters and accessories; new carbide-tipped face mill; standard face mills.

451—Westinghouse Electric Corp.
New rectifier power pack for dc motors on ac circuit; new all-steel dc motor.

32—Wiedemann Machine Co.
New turret punch presses in operation; punches and dies.

452—Wilson Mechanical Instrument Co.
Latest Rockwell hardness tester; superficial hardness tester; Tukon tester; 136° diamond pyramid hardness tester.

35-J—Wilton Tool Mfg. Co.
Machinists vises and other toolroom equipment.

121—Yale & Towne Mfg. Co.
High-lift tilting fork truck; new tilting fork worksaver; counting scale for small parts, bottom dump hopper for fork trucks.

MACHINE TOOLS

. . . News and Market Activities

Eve of Big Show Finds Signs of Pessimism in the Industry

Markets Are Quiet Throughout The Country As Show Plans Get Full Attention

o o o

• • • **On the eve of** the biggest machine tool show in history there are signs of pessimism in the industry. With capacity for the year on a 2-shift basis estimated at some $600 million, it is doubted by some observers whether total shipments can be expected to exceed $250 million. As the industry is constituted, only 7 to 8 builders account for an estimated 75 pct of monthly shipments, reported last week for July at $18.6 million. The remaining 25 pct of business is spread rather thinly throughout the rest of the industry. Trade reports indicate that there are a few builders who recently have not had a single order during the month.

Tool builders are not particularly hopeful of the prospects for bettering this gloomy picture as the result of business growing out of the show, as builders and dealers report no knowledge of any tooling programs that are being held up for it. However, all indications point to tremendous attendance records at the show though buying may not be of the same magnitude.

In analyzing the spottiness of the current market, observers who point out the fact that builders of such tools as lathes and shapers are in the best relative position, attribute this to the fact that plants operating them during the war bought out these tools under their option at the end of the war to keep in their own tool rooms. Milling machines and other specialized tools, on the other hand, have flooded the surplus tool market and until they are fully disposed of there is small likelihood of any significant volume of new tool purchases developing.

Many builders are reported to have found it necessary to cut down their operating complement drastically. Reports indicate that the industry as a whole is maintaining its operating staff at only 50 pct of its maximum potential. This is true despite the trend in the industry to turn toward other commercial fields to supplement machine tool business. In many instances these sidelines are not proving dependable at the present time. For example, the market for roadbuilding machinery is very poor now as most municipalities and larger governmental units have approved projects at costs much lower than those prevailing. Hence roadbuilding projects are not going ahead and contractors are not in the market for new equipment. In many other fields, particularly in consumer products, the return of a buyer's market may be expected to cause marketing difficulties to machine tool builders that have newly entered other fields.

Machine tool builders are doing contract work on a broad scale. However, industry members are pessimistically conscious of the fact that this work will probably be lost to them when they need it most.

Some tool buyers have expressed dissatisfaction in current delivery time caused by the emphasis of builders on new tools for the show. Those buyers who have permitted the display at the show of new tools built for them will not suffer any real delay in most instances, for builders generally have been concentrating on show tool production and it is likely that these tools will be received by the buyer a month or two earlier than otherwise.

In Detroit, machine tool activity is reported at a standstill as show time grows nearer. Aside from a few scattered inquiries dealers and producers say they are devoting the major portion of their energies to the show at Chicago. Realizing the extensiveness of the Chicago exhibits, many tool engineers are studying their floor plans intensively in order to use their time in Chicago to best advantage.

A major disappointment for a number of machine tool suppliers here was a recent holdup on the extensive tooling program initiated by Detroit Transmission Div. of General Motors. While the change in GM's plans may indicate a major engineering decision, the fact that work on specialized equipment for the new transmission will be continued while standard machines are held up would indicate a delay in the program rather than a cancellation.

Gage and fixture suppliers also report a market slowing down in activity during the past 30 days.

At least one automobile plant is expected to go down within the next 30 to 45 days for a model change. Most sources here believe that when plants are closed, 30-day shutdowns for changeovers will be common while some plants are expected to extend it to 60 days or even longer.

In Cincinnati, the machine tool market reflects a preshow and vacation slackness. All attention for the past several weeks has been centered on the forthcoming exhibit and will continue until the affair ends. Manufacturers speak of the great possibilities for new business as the result of consumer statements that they will be interested after the new developments are seen. Currently business is dull. Some domestic ordering is reported but foreign business is almost negligible.

In New England, temperatures of 90 plus and excessive humidity have knocked out every thought of buying of machine tools that may have existed. Production by metalworking plants has dropped below normal; deliveries of castings to builders are uncertain and of certain types of steel backward; transportation of finished products slowed; vacation season drawing to a close. Few have been in the mood to even think of machine tools.

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NONFERROUS METALS

. . . News and Market Activities

Lead

• • • **Producers are** selling lead in weekly allotments for September and October delivery. There is no longer any shortage of lead to meet the overall demand but neither is there any oversupply which might indicate the probability of an early price readjustment. While the bulk of current orders is for September delivery, early commitments for October indicate shipments during that month can be expected to be heavy. September deliveries will exceed those of August.

•

Copper

• • • **Although too early** to report conclusively as to the volume of copper requirements in October, it is apparent to copper producers from requests already received that October shipments will exceed September's by an appreciable tonnage. Demands from the wire mills are very high as expected, but even the requirements of the brass mills are somewhat higher. This latter is undoubtedly due to the reduction of inventories prior to and after the vacation periods. However, some brass mills are reported to be still working down their copper and scrap inventories. Foreign demand is reported to be negligible and even foreign inquiries are lacking due to the dollar shortages abroad. There are some hopeful prospects in the foreign situation which might asure U. S. loans to some nations and permit them to extend their purchases of domestic and South American copper. Should these developments not be realized, however, market factors are of the opinion that South American copper would be brought into the domestic market and would serve to exert a depressing effect on price. Meanwhile, the domestic price structure is firm and the domestic market is expected to remain well in balance for at least several weeks to come. During the week, two of the mining subsidiaries of Anaconda closed down their operations because of the absence of subsidy payments.

•

Drop Price of Ingots

New York

• • • **The price spread** of ½¢ to 1¢ per lb in brass and bronze ingots which began with the announcement of price cuts in that range by one ingot producer at mid-week has continued without change. Other producers are maintaining their prices in the face of a very quiet market demand. The scrap market reacted during the week on this news so as to increase the price of composition metals but by week end these scrap grades had returned to their previous levels.

•

Aluminum Price Higher

Paris

• • • **The price of** aluminum ingots in France has been advanced from $465.22 to $656.00 a metric ton, equal to 650 pct of the price of 1938, while a general index of wholesale prices was 904 pct in June. Capacity of production of aluminum in France increased from 50,000 metric tons in 1938 to 95,000 metric tons, but due to insufficient supply of power and coal, production is limited to 55,000 metric tons a year.

Zinc

• • • **The zinc market** is quiet but galvanizers' demand is high and would be much higher if steel products were not in such short supply. Some producers are reported to have paid premiums to Joplin mine operators in order to permit them to continue in operation without the government subsidy formerly paid. Observers question how the producers involved will be able to sell their slab zinc at current market prices after paying these premiums. However, the Joplin concentrates are necessary in order to sweeten the foreign or domestic concentrates used in their production. The Federal Bureau of Purchasing has sent out to all producers bids for High Grade and Special High Grade zinc for the permanent stockpile. The industry is confident that the market is on a firm price basis with the government starting to purchase for the stockpile and the closing down of some high cost producers for lack of subsidy payments.

•

Relax Antimony Controls

Washington

• • • **Exports and shipments** of antimony no longer need approval of the Commerce Dept., under a new ruling of the department's Office of Materials Distribution.

OMD, in announcing the amendments to conservation order M-112, ruled that shippers and exporters are now free to ship antimony without OMD approval. Current supply is now held to be sufficient to meet domestic requirements.

Administration of antimony controls now is confined to correlation of requests with the form of antimony most appropriate in terms of supply and suitability. Authorizations to accept deliveries will be checked against reports of shipments by producers, distributors and importers.

Export licenses covering antimony will continue to be issued by the department's Office of International Trade.

Nonferrous Metals Prices

Cents per pound

	Sept. 3	Sept. 4	Sept. 5	Sept. 6	Sept. 8	Sept. 9
Copper, electro, Conn.	21.50	21.50	21.50	21.50	21.50	21.50
Copper, Lake, Conn.	21.625	21.625	21.625	21.625	21.625	21.625
Tin, Straits, New York	80.00	80.00	80.00	80.00	80.00	80.00
Zinc, East St. Louis	10.50	10.50	10.50	10.50	10.50	10.50
Lead, St. Louis	14.80	14.80	14.80	14.80	14.80	14.80

Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, f.o.b. shipping point (min. 10,000 lb)	15.00
Aluminum pig, f.o.b. shipping point	11.00
Antimony, American Laredo Tex.	33.00
Beryllium copper, 3.75-4.25% Be; dollars per lb contained Be	$17.00
Beryllium aluminum 5% Be, dollars per lb contained Be	$35.50
Cadmium, del'd	$1.75
Cobalt, 97-99% (per lb)	$1.65 to $1.72
Copper electro, Conn. Valley	$21.50
Copper, lake, Conn. Valley	21.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$80 to $90
Lead, St. Louis	14.80
Lead, New York	15.00
Magnesium, 99.8+%	20.50
Magnesium, sticks, carlots	36.00
Mercury, dollars per 76-lb flask, f.o.b. New York	$85.00 to $87.00
Nickel, electro, f.o.b. New York	37.67
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$63 to $66
Silver, New York, cents per oz.	70.25
Tin, Straits, New York	80.00
Zinc, East St. Louis	10.50
Zinc, New York	11.005
Zirconium copper, 6 pct Zr. per lb contained Zr	$8.75

Remelted Metals

Brass Ingot

(Cents per lb, in carloads)

85-5-5-5 ingot	
No. 115	18.00-19.00
No. 120	17.50-18.50
No. 123	17.00-18.00
80-10-10 ingot	
No. 305	22.00-23.00
No. 315	20.00-21.00
88-10-2 ingot	
No. 210	27.75-28.75
No. 215	26.25-27.25
No. 245	20.25-21.25
Yellow ingot	
No. 405	14.50-15.25
Manganese Bronze	
No. 421	16.50-17.25

Aluminum Ingot

(Cents per lb, lots of 30,000 lb)

95-5 aluminum-silicon alloys:	
0.30 copper, max.	15.75
0.60 copper, max.	15.50
Piston alloys (No. 122 type)	14.25
No. 12 alum. (No. 2 grade)	13.75
108 alloy	14.00
195 alloy	14.75
AXS-679	14.00
Steel deoxidizing aluminum, notch-bar, granulated or shot	
Grade 1—95 pct-97½ pct	14.50
Grade 2—92 pct-95 pct	12.75
Grade 3—90 pct-92 pct	12.00-12.25
Grade 4—85 pct-90 pct	11.50-11.75

Electroplating Supplies

Anodes

(Cents per lb, f.o.b. shipping point in 500 lb lots)

Copper, frt. allowed	
Cast, oval, 15 in. or longer	37⅝
Electrodeposited	32.34
Rolled, oval, straight, delivered	32.59
Brass, 80-20, frt allowed	
Cast, oval, 15 in. or longer	33⅜
Zinc, Cast, 99.99	18¾
Nickel, 99 pct plus, frt allowed	
cast	51
Rolled, depolarized	52
Silver 999 fine	
Rolled, 1000 oz. lots, per troy oz.	67¼

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	43.00
Copper sulphate, 99.5, crystals, bbls	11.50
Nickel salts, single, 425 lb bbls, frt allowed	14.50
Silver cyanide, 100 oz. lots, per oz.	54.00
Sodium cyanide, 96 pct, domestic, 200 lb drums	15.00
Zinc cyanide, 100 lb drums	34.00
Zinc, sulphate, 89 pct, crystals, bbls, frt allowed	7.75

Mill Products

Aluminum

(Cents per lb, base, subject to extras for quantity, gage, size, temper and finish)

Drawn tubing: 2 to 3 in. OD by 0.065 in. wall; 3S, 43.5¢; 52S-O, 67¢; 24S-T, 71¢; base, 30,000 lb.

Plate: ¼ in. and heavier: 2S, 3S, 21.2¢; 52S, 24.2¢; 61S, 23.8¢; 24S, 24S-AL, 24.2¢; 75S, 75S-AL, 30.5¢; base, 30,000 lb.

Flat Sheet: 0.136-in. thickness: 2S, 3S, 23.7¢; 52S, 27.2¢; 61S, 24.7¢; 24S-O, 24S-OAL, 26.7¢; 75S-O, 75S-OAL, 32.7¢; base, 30,000 lb.

Extruded Solid Shapes: factor determined by dividing the perimeter of the shape by its weight per foot. For factor 1 through 4, 3S, 26¢; 14S, 32.5¢; 24S, 35¢; 53S, 61S, 28¢; 63S, 27¢; 75S 45.5¢; base, 30,000 lb.

Wire, Rod and Bar: screw machine stock, rounds, 17S-T, ¼ in., 29.5¢; ½ in., 37.5¢; 1 in., 26¢; 2 in., 24.5¢; hexagons, ¼ in., 35.5¢; ½ in., 30¢; 1 in., 2 in., 27¢; base, 5000 lb. *Rod:* 2S, 3S, 1¼ to 2½ in. diam. rolled, 23¢; cold-finished, 23.5¢ base, 30,000 lb. *Round Wire:* drawn, coiled, B & S gage 17-18; 2S, 3S, 33.5¢; 56S, 39.5¢; 10,000 lb base. B & S gage 00-1: 2S, 3S, 21¢; 56S, 30.5¢. B & S 15-16: 2S, 3S, 32.5¢; 56S, 38¢; base, 30,000 lb.

Magnesium

(Cents per lb f.o.b. mill. Base quantity 30,000 lb.)

Sheet and Plate: Ma. FSa. ¼ in., 54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58¢-60¢; 10, 59¢-61¢; 14, 69¢-74¢; 16, 79¢-81¢; 18, 87¢-89¢; 22, $1.25-$1.31; 24, $1.71-$1.75.

Round Rod: M, diam, in., ¼ to ⅜, 47¢; ½ to ¾, 45¢ 1¼ to 2½, 43.5¢; 3½ to 5, 42.5¢. Other alloys higher.

Square, Hexagonal Bar: M, size across flats, in., ¼ to ⅜, 52.5¢; ½ to ¾, 47.5¢; 1¼ to 2¼, 45¢; 3½ to 5, 44¢. Other alloys higher.

Solid Shapes, Rectangles: M, form factors, 1 to 4, 46¢; 11 to 13, 49¢; 20 to 22, 51.5¢; 29 to 31, 59.5¢; 38 to 40, 75.5¢; 47 to 49, 98¢. Other alloys higher.

Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057, ¼ to 5/16, $1.21; 5/16 to ⅜, $1.12; ⅜ to 7/16, 97¢; 0.058 to 0.064, 7/16 to ½, 89¢; ½ to ⅝, 81¢; 0.065 to 0.082, ⅝ to ¾, 76¢; ¾ to 1, 72¢; 0.083 to 0.108, 1 to 2, 68¢; 0.165 to 0.219, 2 to 3, 59¢; 3 to 4, 57¢. Other alloys higher.

Nickel and Monel

(Cents per lb, f.o.b. mill)

	Nickel	Monel
Sheets, cold-rolled	54	43
No. 35 sheets	..	41
Strip, cold-rolled	60	44
Rod		
Hot-rolled	50	39
Cold-drawn	55	44
Angles, hot-rolled	50	39
Plates	52	41
Seamless tubes	83	71
Shot and blocks	..	31

Zinc

(Cents per lb, f.o.b. mill)

Sheet, l.c.l.	15.50
Ribbon, ton lots	14.50
Plates	
Small	13.50
Large, over 12 in.	14.50

Copper, Brass, Bronze

(Cents per pound, f.o.b. mill effective June 11)

	Extruded Shapes	Rods	Sheets
Copper	33.53	....	33.68
Copper, hot-rolled	....	30.03	....
Copper, drawn	....	31.03	....
Low brass	34.04*	31.07	31.38
Yellow brass	32.39*	29.32	29.63
Red brass	34.65*	31.68	31.99
Naval brass	29.56	28.31	34.25
Leaded brass	27.98	24.39	30.13
Commercial bronze	35.52*	32.80	33.11
Manganese bronze	33.14	31.64	37.75
Phosphor bronze, 5 pct.	53.25*	52.25	52.00
Muntz metal	29.17	27.92	32.36
Everdur, Herculoy, Olympic, etc.	37.07	35.57	38.44
Nickel silver, 5 pct.	41.20	40.28	38.67
Architectural bronze	27.94	....	....

*Seamless tubing.

Scrap Metals

(Dealers' buying prices, f.o.b. New York in cents per pound.)

Brass Mill Scrap

(Lots of less than 15,000 lb.)

Cartridge brass turnings	14½
Loose yellow brass trimmings	15½

Copper and Brass

No. 1 heavy copper and wire	15½—16
No. 2 heavy copper and wire	14½—16
Light copper	13½—14
Auto radiators (unsweated)	8½— 9
No. 1 composition	10½—11
No. 1 composition turnings	10 —10½
Clean red car boxes	9 — 9½
Cocks and faucets	8½— 9
Mixed heavy yellow brass	7 — 7¼
Old rolled brass	7 — 7¼
Brass pipe	8 — 8½
New soft brass clippings	11 —11½
Brass rod ends	9½—10
No. 1 brass rod turnings	8½— 9

Aluminum

Alum. pistons free of struts	3½— 4
Aluminum crankcases	5½— 6
2S aluminum clippings	8 — 8½
Old sheet & utensils	5½— 6
Mixed borings and turnings	— 2
Misc. cast aluminum	5 — 5½
Dural clips (24S)	5 — 5½

Zinc

New zinc clippings	6 — 6¼
Old zinc	4¼— 4½
Zinc routings	2½— 3
Old die cast scrap	2½— 3

Nickel and Monel

Pure nickel clippings	15½—17½
Clean nickel turnings	14 —15
Nickel anodes	16 —17
Nickel rod ends	17 —18
New Monel clippings	10 —10½
Clean Monel turnings	7 — 8
Old sheet Monel	9½—10
Old Monel castings	7½— 8
Inconel clippings	8 — 8½
Nickel silver clippings, mixed	7½— 8
Nickel silver turnings, mixed	5½— 6

Lead

Soft scrap lead	10 —10½
Battery plates (dry)	5 — 5½

Magnesium Alloys

Segregated solids	6½— 7
Castings	4½— 5½

Miscellaneous

Block tin	63 —65
No. 1 pewter	48 —50
No. 1 auto babbitt	38 —40
Mixed common babbitt	11½—12
Solder joints	12 —13
Siphon tops	38 —39
Small foundry type	13 —13½
Monotype	12 —12½
Lino and stereotype	11½—12
Electrotype	9½—10
New type shell cuttings	11 —11½
Clean hand picked type shells	4½— 5
Lino and stereo dross	5 — 5½
Electro dross	3 — 3¼

Lead Products

(Cents per lb)

F.o.b. shipping point freight collect Freight equalized with nearest free delivery point.

Full lead sheets	18.25
Cut lead sheets	18.75
Lead pipe, manufacturing point	17.50
Lead traps and bends	List +42%
Combination lead and iron bends and ferrules, also combination lead and iron ferrules	List +42%
Lead wool	19.50

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SCRAP

. . . News and Market Activities

Prices Hold Steady in Quiet Market

New York

• • • **For the fourth** consecutive week heavy melting steel prices remained stagnant in almost all markets. Heavy melting steel scrap was weaker at Philadelphia and it was down an average of 75¢ a ton in Boston for the only significant price changes of the week. No. 1 cupola cast was $1 stronger at Pittsburgh.

On the whole the market gave observers the impression it was drifting with little significant undertones to give a clue to its future direction. It had been expected that there would have been a testing period by this time but mill buying apparently has not been too energetic, although consumers' inventories are not what they should be at this time of the year.

Brokers indicate that in many areas scrap is not coming out in the volume they would like to see, though in others the flow is good. Buffalo reports say the delivery jam that temporarily held up shipments to a large mill there would be cleared up this week. From other points came reports that dealers' yard stocks were low. Meanwhile, the foundries—whose demand generally falls off during the summer—were coming back into the market for the cast grades and there were signs of some tightness there.

In the steel mill heavy melting grades this week's market was held in precarious balance in the face of three upsetting factors: Mills need to build up inventories against the winter; they are strongly resisting higher prices; dealers don't have too much scrap to sell—they've been working hard for the past month to clean up their older and higher priced orders and now some are inclined to sit back a bit and hope for higher prices.

•

PITTSBURGH—The market is quiet here this week. Prime grades are unchanged in price. Cupola cast is stronger with quotations up $1. The leading interest is holding up scrap shipments to its major plants pending settlement of the wildcat railroad strike. Operations have dipped considerably in the district but there is no indication that current scrap prices will be adversely affected by this situation. Jewish religious holidays next week will mean a continuance of the current quietness.

•

CHICAGO—Last week found the market marking time awaiting new orders. Dealers yards for the most part are bare and mills report their inventories have substantially improved over a month ago. Most trade observers still regard the market as strong. The mills as yet have been successful in holding the current price stable and some mills have relied chiefly on earmarked scrap from their customers to achieve that end. Country scrap is beginning to appear in the yards which indicates the farmers, with the harvest out of the way, are devoting some time to unloading unusable machinery.

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CLEVELAND—The scrap market here and in the Valley is very steady despite the number of old, high priced orders which are still out. Brokers' buying prices in some cases are right up to the limit, and there have been no cancellations of high priced orders as yet, according to sources in the trade. Indications are that most major consumers in this area will be out of the market for about another 2 weeks, when prices will get the acid test once more.

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BOSTON—With steel mills indifferent, brokers have shaded prices to induce buying. As a result, yards are again on the sidelines waiting developments. In the meantime, those who can handle them, are battleship minded. Several boats have been and are being scrapped at Quincy; a Rhode Island steel mill has bought seven boats; a Dorchester yard one; other purchases are in the wind. The battleship New Mexico is at the local navy yard waiting for bids. She will yield at least 30,000 tons of scrap and outmoded 14-in. guns.

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PHILADELPHIA—Outside of a narrower spread in heavy melting scrap, there were no major price developments in this market last week. Shipments on old high-priced orders have about run their course and the volume on current orders has dropped appreciably, according to market sources. Mills report that their scrap inventories are fairly good and one large factor in the local market has stopped buying. Dealers are said to be not actively seeking to market scrap at current prices, expecting a price rise as efforts grow to assure winter stockpiles.

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NEW YORK—For the fourth consecutive week, prices are unchanged here. Reports on the volume of material moving early this week range from "poor" to "very poor." At present the market is squeezed between buyers' efforts to hold prices down and the belief in some dealer circles that they should go up. Informed observers decline to predict which group will get the upper hand.

DETROIT—The question as to whether or not Detroit mills will be able to buy scrap for less than $37 Detroit will be answered on Sept. 15 when present contracts expire and new buying orders are placed. At the moment, scrap flow is reported as satisfactory on a $37 interim basis. Low phos plate continues to show strength, resulting in an increase in price of $1 per ton this week. Meanwhile, there are strong indications that prices of cast iron grades will be tested when foundries reenter the market to replenish their dwindling supplies.

•

BUFFALO—Openhearth scrap was steady this week at $37 to $38 but blast furnace grades sagged $1 a ton due to the refusal of two big consumers to pay over $26 for turnings and borings. Partly offsetting these bids, however, were offers of $32 for shovelings from electric furnaces at Niagara Falls and demand for machine shop turnings from hydraulic press operators. One dealer estimated that 50 pct of the turnings supplied was moving on conversion deals at less than $26. The mill that held up shipments just before Labor Day was expected to lift the ban before the end of the week. Shippers will have an average of 10 days to complete deliveries on these old $43 contracts.

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ST. LOUIS—Steel mills in the St. Louis district are sounding out brokers as to the possibility of buying at lower prices but brokers are holding firm. Shipments continue good despite temperatures above 90, as holders want to move their stocks at present prices. Southern Railway has a list of 55 carloads. The largest item being 22 carloads of railroad heavy melting.

•

CINCINNATI—While there is not too much activity in the Cincinnati market, dealers here indicate that prices are maintaining the same high levels. Consumers indicate they are buying, but not reaching out to the more distant points for scrap. Some resistance is maintained on the parts of mills, but they are not staying out of the market altogether. Mills indicated that they have a fairly good inventory and are buying only what is needed.

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BIRMINGHAM—With the trade undecided whether prices will move up or down, few new orders for scrap are being placed here. The limited tonnages being sold are going to small customers. Heaviest demand is for cast grades but this type of material still is very scarce in this area.

•

TORONTO—Despite the fact that ceilings and controls have been off cast scrap, stove plate, cast car wheels and malleable iron for several weeks, dealers have been unable to establish either buying or selling prices. While some dealers decline to hand out any information regarding prices, others state that on No. 1 cast they are paying anywhere from $32 to $35 per gross ton, and in some instances even higher prices, while sales are being made up to $40 per ton.

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages.

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. melting	$37.50 to $38.00
RR. hvy. melting	41.00 to 42.00
No. 2 hvy. melting	37.50 to 38.00
RR. scrap rails	45.50 to 46.00
Rails 2 ft. and under	48.75 to 49.25
No. 1 comp'd bundles	37.50 to 38.00
Hand bdld. new shts.	37.50 to 38.00
Hvy. axle turn.	36.00 to 37.00
Hvy. steel forge turn.	36.00 to 37.00
Mach. shop turn.	32.50 to 33.00
Shoveling turn.	34.50 to 35.00
Mixed bor. and turn.	32.50 to 33.00
Cast iron borings	33.50 to 34.00
No. 1 cupola cast	42.50 to 43.50
Hvy. breakable cast	37.00 to 37.50
Malleable	52.00 to 53.00
RR. knuck and coup.	47.50 to 48.00
RR. coil springs	47.50 to 48.00
RR. leaf springs	47.50 to 48.00
Rolled steel wheels	47.50 to 48.00
Low phos.	45.00 to 45.50

CHICAGO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$38.50 to $39.00
No. 2 hvy. melting	38.50 to 39.00
No. 1 bundles	38.50 to 39.00
No. 2 dealers' bundles	38.50 to 39.00
Bundled mach. shop turn.	38.50 to 39.00
Galv. bundles	36.50 to 37.00
Mach. shop turn.	33.50 to 34.00
Short shov. turn.	35.50 to 36.00
Cast iron borings	34.50 to 35.00
Mix. borings & turn.	33.50 to 34.00
Low phos, hvy. forge.	45.00 to 46.00
Low phos, plates	42.00 to 42.50
No. 1 RR. hvy. melt.	43.75 to 44.25
Rerolling rails	47.00 to 48.00
Miscellaneous rails	44.00 to 45.00
Angles & splice bars	47.00 to 47.50
Locomotive tires, cut	43.00 to 43.50
Cut bolster & side frames	45.00 to 46.00
Standard stl. car axles	49.00 to 50.00
No. 3 steel wheels	45.00 to 46.00
Couplers & knuckles	45.50 to 46.00
Rails 2 ft. and under	48.50 to 49.50
Malleable	61.00 to 62.00
No. 1 mach. cast.	49.00 to 50.00
No. 1 agricul. cast.	44.00 to 46.00
Hvy. breakable cast.	40.00 to 41.00
RR. grate bars	42.00 to 42.50
Cast iron brake shoes	44.00 to 44.50
Cast iron carwheels	42.50 to 43.50

CINCINNATI

Per gross ton delivered to consumer:

No. 1 hvy. melting	$38.00 to $39.00
No. 2 hvy. melting	38.00 to 39.00
No. 1 bundles	38.00 to 39.00
No. 2 bundles	38.00 to 39.00
Mach. shop turn.	28.50 to 29.00
Shoveling turn.	30.50 to 31.00
Cast iron borings	28.50 to 29.00
Mixed bor. & turn.	28.00 to 29.00
Low phos. plate	39.00 to 40.00
No. 1 cupola cast.	44.00 to 45.00
Hvy. breakable cast.	35.00 to 36.00
Scrap rails	39.00 to 40.00

BOSTON

Dealers' buying prices per gross ton, f.o.b. cars:

No. 1 hvy. melting	$29.50 to $30.00
No. 2 hvy. melting	29.50 to 30.00
Nos. 1 and 2 bundles	29.50 to 30.00
Busheling	29.50 to 30.00
Shoveling turn.	27.00 to 27.50
Machine shop turn.	25.00 to 25.50
Mixed bor. & turn.	25.00
Cl'n cast. chem. bor.	26.00 to 27.00
No. 1 machinery cast.	36.50 to 38.50
No. 2 machinery cast.	36.50 to 38.50
Heavy breakable cast.	35.00 to 36.50

DETROIT

Per gross ton, brokers' buying prices, f.o.b. cars:

No. 1 hvy. melting	$34.00 to $35.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 bundles	34.00 to 35.00
New busheling	34.00 to 35.00
Flashings	34.00 to 35.00
Mach. shop turn.	27.00 to 28.00
Shoveling turn.	28.00 to 29.00
Cast iron borings	28.00 to 29.00
Mixed bor. & turn.	28.00 to 29.00
Low phos. plate	38.00 to 39.00
No. 1 cupola cast.	38.00 to 39.00
Hvy. breakable cast.	31.00 to 32.00
Stove plate	32.00 to 34.00
Automotive cast.	38.00 to 40.00

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. melting	$36.50 to $37.00
No. 2 hvy. melting	36.50 to 37.00
No. 1 bundles	36.50 to 37.00
No. 2 bundles	36.50 to 37.00
Mach. shop turn.	28.50 to 29.50
Shoveling turn.	28.50 to 29.50
Mixed bor. & turn.	28.50 to 29.50
Clean cast chemical bor.	32.00 to 33.00
No. 1 cupola cast.	46.50 to 47.50
Hvy. breakable cast.	43.50 to 44.50
Cast. charging box.	43.50 to 44.50
Clean auto cast.	46.50 to 47.50
Hvy. axle forge turn.	36.50 to 37.50
Low phos. plate	41.00 to 42.00
Low phos. punchings	41.00 to 42.00
Low phos. bundles	39.00 to 40.00
RR. steel wheels	44.00 to 45.00
RR. coil springs	44.00 to 45.00
RR. malleable	58.00 to 60.00

ST. LOUIS

Per gross ton delivered to consumer:

No. 1 hvy. melting	$40.00 to $41.00
No. 2 hvy. melting	38.50 to 39.50
Bundled sheets	38.50 to 39.50
Mach. shop turn.	30.00 to 31.00
Locomotive tires, uncut	41.00 to 42.00
Mis. std. sec. rails	42.00 to 43.00
Rerolling rails	45.00 to 46.00
Steel angle bars	42.50 to 43.50
Rails 3 ft. and under	45.00 to 46.00
RR. steel springs	45.00 to 46.00
Steel car axles	43.00 to 44.00
Grate bars	36.00 to 37.00
Brake shoes	39.00 to 40.00
Malleable	58.00 to 60.00
Cast iron car wheels	41.00 to 43.00
No. 1 machinery cast.	43.00 to 44.00
Hvy. breakable cast.	38.00 to 39.00

BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy. melting	$34.00 to $35.00
No. 2 hvy. melting	34.00 to 35.00
No. 2 bundles	34.00 to 35.00
No. 1 busheling	34.00 to 35.00
Long turnings	23.00 to 24.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	24.00 to 25.00
Bar crops and plate	38.00 to 38.50
Structural and plate	38.00 to 38.50
No. 1 cupola cast.	44.00 to 45.00
Stove plate	42.00 to 42.50
No. 1 RR. hvy. melt.	36.00 to 37.00
Steel axles	38.00 to 39.00
Scrap rails	37.50 to 38.00
Rerolling rails	38.50 to 39.00
Angles & splice bars	38.50 to 39.00
Rails 3 ft. & under	38.50 to 39.00
Cast iron carwheels	35.00 to 36.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. melting	$39.50 to $40.00
No. 2 hvy. melting	39.50 to 40.00
Mach. shop turn.	33.00 to 34.00
Short shov. turn.	34.00 to 35.00
Cast iron borings	33.00 to 34.00
Low phos.	44.00 to 45.00

NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	32.00
No. 2 bundles	32.00
Comp. galv. bundles	30.00
Mach. shop turn.	25.00 to 26.00
Mixed bor. & turn.	25.00 to 26.00
Shoveling turn.	27.00 to 28.00
No. 1 cupola cast.	39.00 to 40.00
Hvy. breakable Cast.	39.00 to 40.00
Charging box cast.	39.00 to 40.00
Stove plate	39.00 to 40.00
Clean auto cast.	39.00 to 40.00
Unstrip. motor blks.	36.50 to 37.50
Cl'n chem. cast bor.	27.00 to 28.00

BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$37.00 to $38.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 bundles	37.00 to 38.00
No. 2 bundles	37.00 to 38.00
No. 1 busheling	37.00 to 38.00
Mach. shop turn.	28.00 to 29.00
Shoveling turn.	30.00 to 31.00
Cast iron borings	28.00 to 29.00
Mixed bor. & turn.	28.00 to 29.00
No. 1 cupola cast.	40.00 to 42.00
Charging box cast.	36.00 to 38.00
Stove plate	39.00 to 40.00
Clean auto cast.	40.00 to 42.00
Small indl. malleable	39.00 to 41.00
RR. malleable	46.00 to 52.00
Low phos. plate	40.00 to 41.00
Scrap rails	40.00 to 41.00
Rails 3 ft. & under	44.00 to 45.00
RR. steel wheels	42.00 to 43.00
Cast iron carwheels	42.00 to 43.00
RR. coil & leaf spgs.	42.00 to 43.00
RR. knuckles & coup.	42.00 to 43.00

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. melting	$38.00 to $38.50
No. 2 hvy. melting	38.00 to 38.50
No. 1 bundles	38.00 to 38.50
No. 2 bundles	38.00 to 38.50
No. 1 busheling	38.00 to 38.50
Drop forge flashings	38.00 to 38.50
Mach. shop turn.	31.50 to 32.00
Shoveling turn.	32.50 to 33.00
Steel axle turn.	38.00 to 38.50
Cast iron borings	32.50 to 33.00
Mixed bor. & turn.	32.50 to 33.00
Low phos.	41.00 to 42.00
No. 1 machinery cast.	47.00 to 47.50
Malleable	54.00 to 55.00
RR. Cast.	47.00 to 47.50
Railroad grate bars	42.00 to 44.00
Stove plate	42.00 to 44.00
RR. hvy. melting	40.50 to 41.00
Rails 3 ft. & under	47.00 to 48.00
Rails 18 in. & under	48.00 to 49.00

SAN FRANCISCO

Per gross ton f.o.b. shipping point

No. 1 hvy. melting	$22.00
No. 2 hvy. melting	22.00
No. 2 bales	22.00

Per gross ton delivered to consumer

No. 3 bales	$16.50
Mach. shop turn.	13.00
Elec. furn. 1 ft. und.	26.00
No. 1 cupola cast.	$32.00 to 33.00
RR. hvy. melting	23.00

LOS ANGELES

Per gross ton delivered to consumer:

No. 1 hvy. melting	$22.50
No. 2 hvy. melting	22.50
No. 1 bales	22.50
No. 2 bales	22.50
No. 3 bales	16.00
Mach. shop turn.	14.50
No. 1 cupola cast.	$32.00 to 33.00
RR. hvy. melting	23.00

SEATTLE

Per gross ton delivered to consumer:

No. 1 & No. hvy. melt.	$20.00 to $22.00
Elec. furn. 1 ft. und.	$25.50 to 27.00
No. 1 cupola cast.	29.00
RR. hvy. melting	23.00

HAMILTON, ONT.

Per gross ton delivered to consumer:
Cast grades f.o.b. shipping point

Heavy melting	$17.50*
No. 1 bundles	17.50*
No. 2 bundles	17.00*
Mixed steel scap	15.50*
Rails, remelting	18.50*
Rails, rerolling	21.50*
Bushelings	13.00*
Mixed borings & turnings	12.50*
Electric furnace bundles	20.50*
Manganese steel scrap	20.00*
No. 1 cast.	$32.00 to 35.00
Stove plate	17.50*
Car wheels, cast	19.50*
Malleable iron	16.00*

* Ceiling price.

Comparison of Prices . .

Advances over past week in **Heavy Type**, declines in *Italics*. Prices are f.o.b. major basing points. The various basing points for finished and semifinished steel are listed in the detailed price tables.

Flat-Rolled Steel: (cents per pound)	Sept. 9, 1947	Sept. 2, 1947	Aug. 12, 1947	Sept. 10, 1946
Hot-rolled sheets	2.80	2.80	2.80	2.425
Cold-rolled sheets	3.55	3.55	3.55	3.275
Galvanized sheets (10 ga.)	3.95	3.95	3.95	4.05*
Hot-rolled strip	2.80	2.80	2.80	2.45
Cold-rolled strip	3.55	3.55	3.55	3.05
Plates	2.95	2.95	2.95	2.50
Plates wrought iron	6.85	6.85	6.85	4.112
Stain's c-r strip (No. 302) *24 ga	30.30	30.30	30.30	30.30
Tin and Terneplate: (dollars per base box)				
Tinplate, standard cokes.	$5.75	$5.75	$5.75	$5.00
Tinplate, electro (0.50 lb)	5.05	5.05	5.05	4.50
Special coated mfg. ternes	4.90	4.90	4.90	4.30
Bars and Shapes: (cents per pound)				
Merchant bars	2.90	2.90	2.90	2.50
Cold-finished bars	3.55	3.55	3.55	3.10
Alloy bars	3.30	3.30	3.30	2.92
Structural shapes	2.80	2.80	2.80	2.35
Stainless bars (No. 302).	26.00	26.00	26.00	25.97
Wrought iron bars	7.15	7.15	7.15	4.76
Wire and Wire Products: (cents per pound)				
Bright wire	3.55	3.55	3.55	3.05
Wire nails	4.25	4.25	4.25	3.75
Rails: (dollars per 100 lb)				
Heavy rails	$2.50	$2.50	$2.75	$43.39*
Light rails *per net ton	2.85	2.85	2.85	49.18*
Semifinished Steel: (dollars per gross ton)				
Rerolling billets	$45.00	$45.00	$45.00	$39.00
Sheet bars	66.00	66.00	59.00	38.00
Slabs, rerolling	45.00	45.00	45.00	39.00
Forging Billets	55.00	55.00	55.00	47.00
Alloy blooms, billets, slabs	66.00	66.00	66.00	58.43
Wire Rods and Skelp: (cents per pound)				
Wire rods	2.80	2.80	2.80	2.30
Skelp	2.60	2.60	2.60	2.05

Pig Iron: (per gross ton)	Sept. 9, 1947	Sept. 2, 1947	Aug. 12, 1947	Sept. 10, 1946
No. 2, foundry, Phila.	$41.22	$41.22	$41.22	$30.43
No. 2, Valley furnace	36.50	36.50	36.50	28.50
No. 2, Southern Cin'ti	39.75	39.75	38.25	27.80
No. 2, Birmingham	34.88	34.88	33.38	24.88
No. 2, foundry, Chicago†	36.00	36.00	36.00	28.50
Basic del'd Philadelphia.	40.72	40.72	40.72	29.93
Basic, Valley furnace	36.00	36.00	36.00	28.00
Malleable, Chicago†	36.50	36.50	36.50	28.50
Malleable, Valley	36.50	36.50	36.50	28.50
Charcoal, Chicago	49.49	49.49	49.49	42.34
Ferromanganese‡	135.00	135.00	135.00	135.00

† The switching charge for delivery to foundries in the Chicago district is $1 per ton.
‡ For carlots at seaboard.

Scrap: (per gross ton)				
Heavy melt'g steel, P'gh.	$37.75	$37.75	$41.50	$20.00
Heavy melt'g steel, Phila.	*36.75*	37.00	39.50	18.75
Heavy melt'g steel, Ch'go	38.75	38.75	40.25	18.75
No. 1, hy. comp. sheet, Det.	34.50	34.50	37.50	17.32
Low phos. Youngs'n	44.50	44.50	43.50	22.50
No. 1, cast, Pittsburgh	43.00	42.50	41.50	20.00
No. 1, cast, Philadelphia.	47.00	47.00	48.50	20.00
No. 1, cast, Chicago	49.50	49.50	51.25	20.00
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$12.00	$12.00	$12.00	$8.75
Foundry coke, prompt	13.75	13.75	13.75	8.50
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro., Conn.	21.50	21.50	21.50	14.375
Copper, Lake, Conn.	21.625	21.625	21.625	14.375
Tin, Straits, New York.	80.00	80.00	80.00	52.00
Zinc, East St. Louis	10.50	10.50	10.50	8.25
Lead, St. Louis	14.80	14.80	14.80	8.10
Aluminum, virgin	15.00	15.00	15.00	15.00
Nickel, electrolytic	37.67	37.67	37.67	35.00
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	33.00	33.00	33.00	14.50

Composite Prices . .

Starting with the issue of Apr. 22, 1943, the weighted finished steel index was revised for the years 1941, 1942, and 1943. See explanation of the change on p. 90 of the Apr. 22, 1943, issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite price for the current quarter is an estimate based on finished steel shipments for the previous quarter. This figure will be revised when shipments for this quarter are compiled.

	FINISHED STEEL	PIG IRON	SCRAP STEEL
Sept. 9, 1947	3.19141¢ per lb.	$36.93 per gross ton.	*$37.75* per gross ton.
One week ago	3.19141¢ per lb.	$37.08 per gross ton.	$37.83 per gross ton.
One month ago	3.19141¢ per lb.	$36.52 per gross ton.	$40.42 per gross ton.
One year ago	2.70711¢ per lb.	$28.13 per gross ton.	$19.17 per gross ton.

	FINISHED STEEL HIGH	FINISHED STEEL LOW	PIG IRON HIGH	PIG IRON LOW	SCRAP STEEL HIGH	SCRAP STEEL LOW
1947	3.19141¢ Aug. 5	2.87118¢ Jan. 7	$37.35 Aug. 19	$30.14 Jan. 7	$41.67 Aug. 5	$29.50 May 20
1946	2.83599¢ Dec. 31	2.54490¢ Jan. 1	30.14 Dec. 10	25.37 Jan. 1	31.17 Dec. 24	19.17 Jan. 1
1945	2.44104¢ Oct. 2	2.38444¢ Jan. 2	25.37 Oct. 23	23.61 Jan. 2	19.17 Jan. 2	18.92 May 22
1944	2.30837¢ Sept. 5	2.21189¢ Oct. 5	$23.61	$23.61	19.17 Jan. 11	15.76 Oct. 24
1943	2.29176¢	2.29176¢	23.61	23.61	$19.17	$19.17
1942	2.28249¢	2.28249¢	23.61	23.61	19.17	19.17
1941	2.43078¢	2.43078¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	$19.17 Apr. 10
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr. 9
1939	2.35367¢ Jan. 3	2.26689¢ May 16	22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May 16
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June 7
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4	23.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June 9
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June 8
1935	2.07642¢ Oct. 1	2.06492¢ Jan. 8	18.84 Nov. 5	17.83 May 14	13.42 Dec. 10	10.33 Apr. 29
1934	2.15367¢ Apr. 24	1.95757¢ Jan. 2	17.90 May 1	16.90 Jan. 27	13.00 Mar. 13	9.50 Sept. 25
1933	1.95578¢ Oct. 3	1.75836¢ May 2	16.90 Dec. 5	13.56 Jan. 3	12.25 Aug. 8	6.75 Jan. 3
1932	1.89196¢ July 5	1.83901¢ Mar. 1	14.81 Jan. 5	13.56 Dec. 6	8.50 Jan. 12	6.43 July 5
1931	1.99626¢ Jan. 13	1.86586¢ Dec. 29	15.90 Jan. 6	14.79 Dec. 15	11.33 Jan. 6	8.50 Dec. 29
1930	2.25488¢ Jan. 7	1.97319¢ Dec. 9	18.21 Jan. 7	15.90 Dec. 16	15.00 Feb. 18	11.25 Dec. 9
1929	2.31773¢ May 28	2.26498¢ Oct. 29	18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec. 8

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipments. Index recapitulated in Aug. 28, 1941, issue.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.

Iron and Steel Prices . . .

Steel prices shown here are f.o.b. basing points in cents per pound or dollars per gross ton. Extras apply. Delivered prices do not reflect 3 pct tax on freight. Industry practice has discontinued arbitrary f.o.b. prices at Gulf and Pacific Ports. Space limitations prevent quotation of delivered prices at major ports. (1) Commercial quality sheet grade; primes, 25c above base. (2) Commercial quality grade. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Applies to certain width and length limitations. (6) For merchant trade. (7) For straight length material only from producers to fabricators. (8) Also shafting. For quantities of 20,000 lb to 89,999 lb. (9) Carload lot in manufacturing trade. (10) Delivered Los Angeles only. (11) Boxed. (12) Produced to dimensional tolerances in AISI Manual Sec. 6. (13) Delivered San Francisco only: Includes 3 pct freight tax. (14) Delivered Kaiser Co. prices: includes 3 pct freight tax. (15) to 0.035 to 0.075 in. thick by ¾ to 3½ in. wide. (16) Spot market as high as $92 gross ton. (17) Delivered Los Angeles: add ½c per 100 lb for San Francisco. (18) Slab prices subject to negotiation in most cases. Some producers charge (19) $2 more, (21) $1 more. Some producers charge (22) 0.05¢ less, (23) 0.10¢ less, (24) 0.20¢ less.

Basing Points	Pittsburgh	Chicago	Gary	Cleveland	Birmingham	Buffalo	Youngstown	Sparrows Point	Granite City	Middletown, Ohio		San Franc'co, Los Angeles, Seattle	DELIVERED TO Detroit	New York	Philadelphia
INGOTS															
Carbon, rerolling	($36.00 f. o. b. mill) (Spot market as high as $80 gross ton)														
Carbon, forging	$46.00														
Alloy	$56.00									(Canton = $56.00)					
BILLETS, BLOOMS, SLABS															
Carbon, rerolling [18]	$45.00[19]	$45.00[19]	$45.00[19]	$47.00	$45.00[19]	$45.00[19]							$48.00[19]		
Carbon, forging billets	$55.00	$55.00	$55.00	$55.00	$55.00	$55.00							$58.00		
Alloy	$66.00	$66.00				$66.00	(Bethlehem, Massillon, Canton = $66.00)						$69.00		
SHEET BARS[16]							$68.00								
PIPE SKELP	2.60¢[21]	2.65¢					2.60¢[21]	2.60¢[21]							
WIRE RODS	2.80¢[21]	2.80¢[21]		2.80¢[21]	2.95¢		(Worcester = 2.90¢[21])					3.52¢[13]			
SHEETS															
Hot-rolled	2.80¢	2.80¢	2.80¢	2.80¢	2.80¢	2.80¢	2.80¢	2.80¢	3.175¢	(Ashland, Ky. = 2.80¢)		3.54[17]¢	2.95¢	3.09¢	3.00¢
Cold-rolled[1]	3.55¢	3.55¢	3.55¢	3.55¢		3.55¢	3.55¢		3.65¢	3.55¢			3.70¢	3.96¢	3.93¢
Galvanized (10 gage)	3.95¢[23]	3.95¢[23]	3.95¢[23]		3.95¢[23]		3.95¢	3.95¢	4.05¢	(Ashland, Ky. = 3.95¢)		4.62¢[17]		4.14¢	4.05¢
Enameling (12 gage)	3.95¢[22]	3.95¢[22]	3.95¢[22]	3.95¢			3.95¢		4.05¢	3.95¢			4.10¢[22]	4.38¢	4.33¢
Long ternes [2] (10 gage)	4.05¢[24]	4.05¢[24]	3.85¢											4.45¢	4.41¢
STRIP															
Hot-rolled [3]	2.80¢	2.80¢	2.80¢	2.80¢[15]	2.80¢		2.80¢					3.60¢[17]	2.95¢	3.23¢	3.18¢
Cold-rolled [4]	3.55¢	3.65¢		3.55¢			3.55¢			(Worcester = 3.75¢)			3.70¢	3.98¢	3.93¢
Cooperage stock	3.10¢	3.10¢			3.10¢		3.10¢							3.39¢	
TINPLATE															
Standard cokes, base box	$5.75	$5.75	$5.75		$5.85			$5.85	$5.85		(Warren, Ohio = $5.75)		$6.175	$6.062[11]	
Electro. box (0.25 lb.)	Deduct 90¢ from standard coke base box price.														
Electro. box (0.50 lb.)	Deduct 70¢ from standard coke base box price.														
Electro. box (0.75 lb.)	Deduct 50¢ from standard coke base box price.														
BLACKPLATE, 29 gage[5]	3.90¢	3.90¢	3.90¢		4.00¢			4.00¢	4.00¢					4.29¢	4.20¢
BLACKPLATE, CANMAKING															
55 lb. to 70 lb.	Deduct $1.55 from standard coke base box.														
75 lb. to 95 lb.	Deduct $1.65 from standard coke base box.														
100 lb. to 118 lb.	Deduct $1.55 from standard coke base box.														
TERNES, MFG., Special coated	Deduct 85¢ from standard coke base box price.														
BARS															
Carbon steel	2.90¢	2.90¢	2.90¢	2.90¢	2.90¢	2.90¢	2.90¢					3.625¢[17]	3.05¢	3.31¢	3.28¢
Rail steel[6]	Subject to negotiation because of fluctuating scrap prices.														
Reinforcing (billet)[7]	2.75¢	2.75¢	2.75¢	2.75¢	2.75¢	2.75¢	2.75¢	2.75¢				3.325¢[17]		3.04¢	2.95¢
Reinforcing (rail)	Subject to negotiation because of fluctuating scrap prices.														
Cold-finished[8]	3.55¢	3.55¢	3.55¢	3.55¢		3.55¢							3.70¢	3.96¢	3.93¢
Alloy, hot-rolled	3.30¢	3.30¢				3.30¢	3.30¢	(Bethlehem, Massillon, Canton = 3.30¢)					3.45¢		3.44¢
Alloy, cold-drawn	4.10¢	4.10¢	4.10¢	4.10¢		4.10¢							4.25¢		
PLATE								(Coatesville = 3.15¢, Claymont = 3.15¢, Geneva, Utah = 3.125¢)							
Carbon steel[12]	2.95¢	2.95¢	2.95¢	2.95¢	2.95¢		2.95¢	2.95¢				3.76¢[14]	3.24¢		3.15¢
Floor plates	4.20¢	4.20¢												4.60¢	4.56¢
Alloy	3.80¢	3.80¢			(Coatesville = 4.50¢)									4.02¢	3.895¢
SHAPES, Structural	2.80¢	2.80¢	2.80¢		2.80¢	2.80¢	(Geneva, Utah = 2.975¢, Bethlehem = 2.80¢)					3.43¢[10]		3.00¢	2.94¢
SPRING STEEL, C-R															
0.26 to 0.40 carbon	3.20¢			3.20¢			(Worcester = 3.40¢)								
0.41 to 0.60 carbon	4.70¢			4.70¢			(Worcester = 4.90¢)								
0.61 to 0.80 carbon	5.30¢			5.30¢			(Worcester = 5.50¢)								
0.81 to 1.00 carbon	6.80¢			6.80¢			(Worcester = 7.00¢)								
Over 1.00 carbon	9.10¢			9.10¢			(Worcester = 9.30¢)								
MANUFACTURERS' WIRE[9]															
Bright	3.55¢	3.55¢		3.55¢	3.55¢		(Worcester = 3.65¢, Duluth = 3.60¢)					4.56¢[13]		3.96¢	3.93¢
Galvanized	Add proper size extra and galvanizing extra to Bright Wire Base														
Spring (high carbon)	4.60¢	4.60¢		4.60¢	(Worcester = 4.70¢, Duluth = 4.85¢) (Trenton = 4.85¢)							5.28¢[13]		4.66¢	4.595¢
PILING, Steel sheet	3.30¢	3.30¢				3.30¢								3.71¢	3.68¢

CORROSION AND HEAT RESISTANT STEELS

In cents per pound, f.o.b. basing point

Basing Point	Chromium Nickel		Straight Chromium			
	No. 304	No. 302	No. 410	No. 430	No. 442	No. 446
Ingot, P'gh, Chi, Canton, Balt, Reading, Ft. Wayne, Phila.	Subject to negotiation			Subject to negotiation		
Blooms, P'gh, Chi, Canton, Phila, Reading, Ft. Wayne, Balt	Subject to negotiation			Subject to negotiation		
Slabs, P'gh, Chi, Canton, Balt, Phila, Reading	Subject to negotiation			Subject to negotiation		
Billets, P'gh, Chi, Canton, Watervliet, Syracuse, Balt	Subject to negotiation			Subject to negotiation		
Billets, forging, P'gh, Chi, Canton, Dunkirk, Balt, Phila, Reading, Water, Syracuse, Ft. Wayne, Titusville	23.00	22.50	17.50	17.50	21.00	25.50
Bars, h-r, P'gh, Chi, Canton, Dunkirk, Watervliet, Syracuse, Balt, Phila, Reading, Ft. Wayne, Titusville	27.50	26.00	20.50	21.80	24.50	30.00
Bars, c-f, P'gh, Chi, Cleve Canton, Dunkirk, Syracuse, Balt, Phila, Reading, Ft. Wayne, Watervliet	27.50	26.00	20.50	21.00	24.50	30.00
Plates, P'gh, Middletown, Canton	31.50	29.50	23.50	24.00	28 00	33.00
Shapes, structural, P'gh, Chi	27.50	26.00	20.50	21.00	24.50	30.00
Sheets, P'gh, Chi, Middletown, Canton, Balt	39.00	37.00	29.00	31.50	35.50	39.50
Strip, h-r, P'gh, Chi, Reading, Canton, Youngstown	25.50	23.50	18.50	19.00	26.00	38.00
Strip, c-r, P'gh, Cleve, Newark, N. J., Reading, Canton, Youngstown	32.50	30.50	24.00	24.50	35.00	56.50
Wire, c-d, Cleve, Dunkirk, Syracuse, Balt, Reading, Canton, P'gh, Newark, N. J., Phila, Ft. Wayne	27.50	26.00	20.50	21.00	24.50	30.00
Wire, flat, c-r, Cleve, Balt, Reading, Dunkirk, Canton	32.46	30.30	23.80	24.34	34.62	58.26
Rod, h-r, Syracuse	27.05	25.97	20.02	20.56	24.34	29.75
Tubing, seamless, P'gh, Chi, Canton (4 to 6 in.)	72.09	72.09	.....	68.49	.....	.....

TOOL STEEL

*(F.o.b. Pittsburgh, Bethlehem, Syracuse, Dunkirk. *Also Canton, Ohio)*

W	Cr	V	Mo	Co	Base Per lb
18	4	1	—	—	82¢
18	4	1	—	5	$1.29
18	4	2	—	—	93¢
1.5	4	1.5	8	—	59¢
6	4	2	6	—	63¢

High-carbon-chromium* ..... 47¢
Oil hardening manganese* ..... 26¢
Special carbon* ..... 24¢
Extra carbon* ..... 20¢
Regular carbon* ..... 17¢

Warehouse prices on and east of Mississippi are 2¢ per lb. higher; west of Mississippi, 4¢ higher.

ELECTRICAL SHEETS

Base, all grades f.o.b. Pittsburgh

	Per lb
Field grade	4.50¢
Armature	4.80¢
Electrical	5.30¢
Motor	6.05¢
Dynamo	6.75¢
Transformer 72	7.25¢
Transformer 65	7.95¢
Transformer 58	8.65¢
Transformer 52	9.45¢

F.o.b. Chicago and Gary, field grade through motor; f.o.b. Granite City, add 10¢ per 100 lb on field grade to and including dynamo.

RAILS, TRACK SUPPLIES

(F.o.b. mill)

Standard rails, heavier than 60 lb
No. 1 O.H., per 100 lb $2.75
Angle splice bars, 100 lb 3.25
(F.o.b. basing points) *per 100 lb*
Light rails (from billets) $3.10
Light rails (from rail steel), f.o.b. Williamsport, Pa. 3.45

	Base per lb
Cut spikes	4.85¢
Screw spikes	6.90¢
Tie plate, steel	3.05¢
Tie plates, Pittsburg, Calif.	3.20¢
Track bolts	7.00¢
Track bolts, heat treated, to rail roads	7.25¢

Basing points, light rails, Pittsburgh, Birmingham; cut spikes and tie plates—Pittsburgh, Chicago, Portsmouth, Ohio; Weirton, W. Va.; St. Louis, Kansas City, Minnequa, Colo.; Birmingham and Pacific Coast ports; tie plates alone—Steelton, Pa.; Buffalo. Cut spikes alone—Youngstown, Lebanon, Pa.; Richmond.

ROOFING TERNEPLATE

(F.o.b. Pittsburgh, 112 sheets)

	20x14 in.	20x28 in.
8-lb coating I.C.	$7.05	$14.10

CLAD STEEL

Base prices, cents per pound

	Plate	Sheet
Stainless-clad		
No. 304, 20 pct, f.o.b. Pittsburgh, Washington, Coatesville, Pa.	*24.00	*22.00
Nickel-clad		
10 pct, f.o.b. Coatesville, Pa.	21.50	....
Inconel-clad		
10 pct, f.o.b. Coatesville	30.00	....
Monel-clad		
10 pct, f.o.b. Coatesville	29.00	....
Aluminized steel		
Hot dip, 20 gage, f.o.b. Pittsburgh	....	9.00

* Includes annealing and pickling, or sandblasting.

MERCHANT WIRE PRODUCTS

To the dealer f.o.b. Pittsburgh, Chicago, Cleveland, Birmingham, Duluth

	Base per keg	Delivered San Francisco
Standard & coated nails	$4.25†	$5.33
Galvanized nails‡‡	4.00†	5.08
Cut nails, carloads, Pittsburgh base	5.80*	....

†10¢ additional at Cleveland, 35¢ at Worcester. ‡‡ Plus $2.75 per 100 lb galvanizing extra. *Less 20¢ to jobbers.

	Base per 100 lb	
Annealed fence wire	$4.20‡	$5.21
Annealed galv. fence wire	4.65‡	5.66

‡10¢ additional at Worcester.

To the dealer f.o.b. Pittsburgh, Chicago, Birmingham

	Base	column
Woven wire fence*	91	114
Fence posts, carloads	90††	...
Single loop bale ties	91	115
Galvanized barbed wire**	101	121
Twisted barbless wire	101	...

* 15½ gage and heavier. ** On 80-rod spools in carload quantities. ††Pittsburgh, Duluth.

HIGH STRENGTH, LOW ALLOY STEELS

base prices, cents per pound

Steel	Aldecor	Corten	Double Strength No. 1	Dynalloy	HI Steel	Mayari R	Otiscoloy	Yoloy	NAX High Tensile
Producer	Republic	Carnegie-Illinois, Republic	Republic	Alan Wood	Inland	Bethlehem	Jones & Laughlin	Youngstown Sheet & Tube	Great Lakes Steel
Plates	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55
Sheets									
Hot-rolled	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30
Cold-rolled	5.30	5.30	5.30	....	5.30	5.30	5.30	5.30	5.30
Galvanized	....	5.85	....	....	....	6.00	....	....	....
Strip									
Hot-rolled	4.30	4.30	4.30	....	4.30	4.30	4.30	4.30	4.30
Cold-rolled	....	....	5.30	....	....	5.30	5.30	5.30	5.30†
Shapes	....	4.30	....	....	4.30	4.30	4.30	4.30	....
Beams	....	4.30	....	....	....	4.30	....	....	....
Bars									
Hot-rolled	4.45	4.45	4.45	....	....	4.45	4.45	4.45	4.45
Cold-rolled	....	....	....	....	....	....	....	....	....
Bar shapes	....	4.45	....	....	4.45	4.45	4.45	4.45	....

† Pittsburgh, add 0.10¢ at Chicago and Gary.

PIPE AND TUBING

Base discounts. f.o.b. Pittsburgh and Lorain, steel buttweld and seamless. Others f.o.b. Pittsburgh only
Base price, $200.00 per net ton

Standard, threaded & coupled

Steel, buttweld	Black	Galv.
⅛-in.	50½	34½
¼-in.	53½	38½
1-in.	56	41½
1¼-in.	56½	42
1½-in.	57	42½
2 in.	57½	43
2½ and 3-in.	58	43½
Wrought Iron, buttweld		
⅛-in.	+ 7	+29
¼-in.	2½	+19
1 and 1¼-in.	8	+11
1½-in.	13½	+ 7½
2-in.	14	+ 7
Steel, lapweld		
2-in.	49	34
2½ and 3-in.	52	37
3½ to 6-in.	54	39
Steel, seamless		
2-in.	48	33
2½ and 3-in.	51	36
3½ to 6-in.	53	38
Wrought Iron, lapweld		
2-in.	5½	+14½
2½ to 3½-in.	8	+10½
4-in.	12	+ 5
4½ to 8-in.	10	+ 6½

Extra Strong, plain ends

Steel, buttweld		
⅛-in.	49½	35
¼-in.	53½	39
1-in.	55½	42
1¼-in.	56	42½
1½-in.	56½	43
2-in.	57	43½
2½ and 3-in.	57½	44
Wrought Iron, buttweld		
⅛-in.	+ 2½	+23
¼-in.	3½	+17
1 to 2-in.	13	+ 7
Steel, lapweld		
2-in.	48	34
2½ and 3-in.	52	38
3½ to 6-in.	55½	41½
Steel, seamless		
2-in.	47	33
2½ and 3-in.	51	37
3½ to 6-in.	54½	40½
Wrought Iron, lapweld		
2-in.	8½	+11
2½ to 4-in.	17½	+ ½
4½ to 6-in.	13	+ 5

Basing discounts for standard pipe are for threads and couplings. For threads only, buttweld, lapweld and seamless pipe, one point higher discount (lower price) applies. For plain ends, buttweld, lapweld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lapweld and seamless 3½-in. and larger four points higher discount (lower price) applies. F.o.b. Gary prices are one point lower discount on all buttweld. On buttweld and lapweld steel pipe, jobbers are granted a discount of 5 pct. On l.c.l. shipments, prices are determined by adding 25 pct and 30 pct and the carload freight rate to the base card.

BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Net base prices per 100 ft, f.o.b. Pittsburgh in carload lots, cut length 4 to 24 ft, inclusive.

OD	Gage	Seamless		Electric Weld	
in.	BWG	Hot-Rolled	Cold-Drawn	Hot-Rolled	Cold-Drawn
2	13	$16.67	$19.99	$16.17	$19.39
2½	12	22.42	26.87	21.75	26.06
3	12	24.93	29.90	24.18	29.00
3½	11	31.17	37.39	30.23	36.27
4	10	38.69	46.38	37.53	44.99

CAST IRON WATER PIPE

Per net ton

6-in. to 24-in. del'd Chicago $85.06
6-in. to 24-in. del'd New York 83.30
6-in. to 24-in., Birmingham 74.50
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles for all rail shipment; rail and water shipment less 98.50
Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Machine and Carriage Bolts

Base discount less case lots

	Percent Off List
½ in. & smaller x 6 in. & shorter..	48
9/16 & ⅝ in. x 6 in. & shorter....	50
All larger diam and longer lengths..	47
Lag, all diam over 6 in. long.....	48
Lag, all diam x 6 in. & shorter....	50
Plow bolts	57

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller	48
9/16 to 1 in. inclusive	47
1⅛ to 1½ in. inclusive	45
1⅝ in. and larger	40

On above bolts and nuts, excepting plow bolts, additional allowance of 15 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

Semifin. Hexagon Nuts	USS	SAE
Base discount less case lots		
7/16 in. and smaller		51
½ in. and smaller	50	..
½ in. through 1 in.		48
9/16 in. through 1 in. ...	49	..
1⅛ in. through 1½ in. ...	47	46
1⅝ in. and larger	40	..

In full case lots, 15 pct additional discount. For 200 lb or more, freight allowed up to 50¢ per 100 lb, based on Cleveland, Chicago, Pittsburgh.

Stove Bolts

Consumer

Packages, nuts separate .... 65 and 10
In bulk 75

On stove bolts freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago, New York on lots of 200 lb or over.

Large Rivets (½ in. and larger)

Base per 100 lb

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham $5.25
F.o.b. Lebanon, Pa. 5.40

Small Rivets (7/16 in. and smaller)

Percent Off List

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham ..... 55 and 5

Cap and Set Screws

Percent Off List

(In packages)	*Consumer*
Hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in., SAE 1020, bright.....	56
¾ to 1 in. x 6 in., SAE 1035, heat treated	47
Set screws, cup and oval points.....	61
Milled studs	33
Flat head cap screws, listed sizes....	21
Fillister head cap, listed sizes	40

Freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago or New York on lots of 200 lb or over.

FLUORSPAR

Metallurgical grade, f.o.b. producing plant.

Effective CaF_2 Content:	*Base price per short ton*
70% or more	$33.00
65% but less than 70%	32.00
60% but less than 65%	31.00
Less than 60%	30.00

LAKE SUPERIOR ORES

(51.50% *Fe, Natural Content, Delivered Lower Lake Ports*)

Per Gross Ton

Old range, bessemer	$5.95
Old range, nonbessemer	5.80
Mesabi, bessemer	5.70
Mesabi, nonbessemer	5.55
High phosphorus	5.55

Prices quoted retroactive to Jan. 1, 1947.

METAL POWDERS

Prices in cents per pound in ton lots, f.o.b. shipping point.

Brass, minus 100 mesh.....24¢ to 28½¢
Copper, electrolytic, 100 and 325 mesh .....30¢ to 31½¢
Copper, reduced, 150 and 200 mesh .....29¢ to 30½¢
Iron, commercial, 100, 200, 325, mesh 96 + % Fe carlots....10¢ to 17¢
Swedish sponge iron, 100 mesh, c.i.f. N. Y., carlots, ocean bags..7.4¢ to 8.6¢
Iron, crushed, 200 mesh and finer, 90 + % Fe carload lots ..... 6¢
Iron, hydrogen reduced, 300 mesh and finer, 98 + % Fe, drum lots .....63¢ to 80¢
Iron, electrolytic, unannealed, 325 mesh and coarser, 99 + % Fe .....35¢ to 37¢
Iron, electrolytic, annealed minus 100 mesh, 99 + % Fe.... 29¢ to 32¢
Iron carbonyl, 300 mesh and finer, 98-99.8 + % Fe.....90¢ to $1.75
Aluminum, 100, 200 mesh, carlots .....23¢ to 26¢
Antimony, 100 mesh ..... 36.00¢
Cadmium, 100 mesh $2.00
Chromium, 100 mesh and finer.... $1.025
Lead, 100, 200, & 300 mesh 18.50¢ to 23.50¢
Manganese, minus 325 mesh and coarser ..... 41¢
Nickel, 100 mesh ..... 51½¢
Silicon, 100 mesh ..... 26¢
Solder powder, 100 mesh..8½¢ plus metal
Stainless steel, 302, minus 100 mesh...75¢
Tin, 100 mesh ..... 90¢
Tungsten metal powder, 98%-99%, any quantity, per lb..... $3.05
Molybdenum powder, 99%, in 100-lb kegs, f.o.b. York, Pa., per lb. $2.65
Under 100 lb $2.90

COKE

Furnace, beehive (f.o.b. oven)	Net Ton
Connellsville, Pa.	$11.50 to $12.50
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	13.00 to 14.50
Foundry, Byproduct	
Chicago, del'd	$17.10
Chicago, f.o.b.	16.10
New England, del'd	19.50
Seaboard, Kearney, N. J., f.o.b.	17.35
Philadelphia, f.o.b.	16.75
Swedeland, Pa., f.o.b.	16.75
Buffalo, del'd	18.25
Ashland, Ohio, f.o.b.	15.50
Painesville, Ohio, f.o.b.	16.60
Erie, del'd	16.75
Cleveland, del'd	17.90
Cincinnati, del'd	15.39
St. Louis, del'd	18.03
Birmingham, del'd	15.00

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick

Carloads, Per 1000

No. 1, Ohio $64.00
First quality, Pa., Md., Ky., Mo., Ohio 70.00
First quality, New Jersey 75.00
Sec. quality, Pa., Md., Ky., Mo, Ohio 64.00
Sec. quality, New Jersey 59.00
No. 2, Ohio 56.00
Ground fire clay, net ton, bulk.... 10.00

Silica Brick

Pennsylvania and Birmingham ...$70.00
Chicago District and Alabama 79.00
Silica cement, net ton (Eastern)... 12.00
East Chicago 13.00

Chrome Brick

Per Net Ton

Standard chemically bonded, Balt., Plymouth Meeting, Chester $59.00

Magnesite Brick

Standard, Balt. and Chester $81.00
Chemically bonded, Baltimore 70.00

Grain Magnesite

Domestic, f.o.b. Balt. and Chester in bulk $44.50
Domestic, f.o.b. Chewelah, Wash., in bulk 24.00
in sacks 28.00

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk. Midwest; add 10¢; Missouri Valley; add 20¢.. 10.55

WAREHOUSE PRICES

Base prices, delivered metropolitan areas, per 100 lb.

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140-50 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140-50 Ann.
Philadelphia	$4.44	$5.18	$5.69	$4.73	$5.28	$4.79	$4.52	$4.78	$5.48	$8.32	$8.42	$9.83	$9.93
New York	4.67	5.67[1]	6.07	4.97	5.80	5.02	4.72	4.97	5.52	8.37	8.47	9.87	9.97
Boston	4.70	5.57[12]	5.50[12]	4.70	6.71	5.05	4.77	4.92	5.57	8.57	8.67	9.92	10.02
Baltimore	4.29	....	5.54	4.70	....	4.74	4.64	4.75	5.45	....	....	....	....
Norfolk	4.75	....	....	5.15	....	5.00	5.00	5.05	5.85	....	....	....	....
Chicago	4.25	5.10	5.65	4.35	5.45	4.60	4.40	4.40	5.10	8.05	8.15	9.30	9.40
Milwaukee	4.399	5.249[1]	5.799	4.499	5.599	4.749	4.549	4.549	5.249	8.349	8.449	9.599	9.699
Cleveland	3.95	4.55	5.238	4.188	5.00	4.25†	4.311	4.10	4.95	8.308	8.408	9.30	9.40
Buffalo	4.25	5.10	5.90	4.60	5.61[5]	4.85	4.40	4.40	4.95	8.05	8.15	9.30	9.40
Detroit	4.35	5.20	5.97	4.64	5.59	4.84†	4.72	4.50	5.22	8.46	8.56	9.69	9.79
Cincinnati	4.471	5.166	5.166	4.694	....	4.903	4.744	4.703	5.403	....	....	....	....
St. Louis	4.549	5.399[1]	5.974	4.649	5.774	4.899	4.699	4.699	5.424	8.524	8.624	9.774	9.874
Pittsburgh	4.25	5.10[1]	5.65	4.35	4.95	4.60	4.40	4.40	4.95	8.05	8.15	9.30	9.40
St. Paul	4.584[7]	5.434[1]	5.834[2]	4.684[7]	....	4.884[7]	4.734[7]	4.734[7]	4.826[6]	....	....	....	....
Omaha	4.868	6.118[1]	6.468	5.168	....	5.418	5.218	5.218	5.918	....	....	....	....
Indianapolis	4.51	5.29	5.84	4.61	5.46	4.86	4.66	4.65	5.36	....	....	....	....
Birmingham	4.45[11]	....	5.65	4.45[11]	....	4.65[11]	4.40[11]	4.40[11]	5.93	....	....	....	....
Memphis	4.82[11]	5.88[11]	6.37	5.02[11]	....	5.17[11]	4.97[11]	4.97[11]	5.88	....	....	....	....
New Orleans	*4.98[11]	6.29[1]	....	5.18[11]	....	5.33[11]	*5.03[11]	*5.13[11]	6.29[6]	....	....	....	....
Houston	5.30	....	6.60	5.25	....	5.35	5.15	5.30	6.60	8.75[16]	8.55[16]	9.70[16]	9.80[16]
Los Angeles	5.65	7.35[1]	7.10	5.95	8.70[5]	5.40	5.50	5.40	7.25[14]	9.90[15]	9.60[15]	11.35[15]	11.35[1]
San Francisco	5.20[8]	6.65	6.85	5.50[8]	....	5.30	5.20	5.05	7.35[10]	....	....	....	....
Seattle	5.30[4]	7.10[2]	6.70[2]	5.60[4]	....	5.45[4]	5.25[4]	5.45[4]	7.45[14]	....	9.75[6]	....	11.10[6]
Portland	5.30	....	6.90	....	....	....	....	....	....	....	....	....	....
Salt Lake City	6.25	....	7.50	6.75	....	6.10	6.25	8.35	7.40	....	....	....	....

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED: Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD-ROLLED: Sheets, 400 to 1999 lb; strip, extras on all quantities; bars 1000 lb and over.

ALLOY BARS: 1000 to 1999 lb.

GALVANIZED SHEETS: 450 to 1499 lb.

EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 999 lb; (5) 2000 lb and over; (6) 1000 lb and over; (7) 400 to 14,999 lb; (8) 400 lb and over; (9) 450 to 1499 lb; (10) 500 to 999 lb; (11) 400 to 399 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1000 to 4999 lb; (16) 4000 lb and over.

* Add 46¢ for sizes not rolled in Birmingham.

† Up to ¾ in. thick and 90 in. wide.

PIG IRON PRICES

Dollars per gross ton. Delivered prices represent minimums. Delivered prices do not include 3 pct tax on freight.

BASING POINT PRICES						DELIVERED PRICES (BASE GRADES)							
Basing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	Consuming Point	Basing Point	Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	37.00	37.50	38.00	38.50	.....	Boston	Everett	$0.50 Arb.	.....	45.50	46.00	.....	.....
Birdsboro	40.00	40.50	41.00	41.50	45.00	Boston	Steelton	4.82	.....	.....	.....	.....	46.82
Birmingham	32.88–35.88	33.38–36.38	.....	.....	.....	Brooklyn	Bethlehem	3.00	40.00	40.50	41.00	41.50	.....
Buffalo	36.00–37.50*	36.00–38.00*	36.50–38.50*	.....	.....	Brooklyn	Birdsboro	3.50	.....	.....	.....	.....	48.50
Chicago	35.50	36.00	36.50	37.00	.....	Cincinnati	Birmingham	4.87	37.75–40.75	38.25–41.25	.....	.....	.....
Cleveland	35.50–38.25*	36.00–38.75*	36.50–39.25*	.....	.....	Jersey City	Bethlehem	1.84	38.84	39.34	39.84	40.34	.....
Duluth	36.00	36.50	37.00	37.50	.....	Jersey City	Birdsboro	2.33	.....	.....	.....	.....	47.33
Erie	35.50	36.00	36.50	37.00	.....	Los Angeles	Provo	5.94	42.94	43.44	.....	.....	.....
Everett	.....	45.00	45.50	.....	.....	Mansfield	Cleveland-Toledo	2.33	37.83–40.58*	38.33–41.08*	38.83–41.58*	39.33	.....
Granite City	36.50	37.00	37.00	.....	.....	Philadelphia	Bethlehem	1.67	38.67	39.17	39.67	40.17	.....
Neville Island	36.00	36.50	36.50	37.00	.....	Philadelphia	Swedeland	1.01	42.01	42.51	43 01	43.51	.....
Provo	37.00	37.50	.....	.....	.....	Philadelphia	Birdsboro	1.49	41.49	41.99	42.49	42.99	48.49
Sharpsville	36.00	36.50	36.50	37.00	.....	Philadelphia	Steelton	2.16	39.16	.....	.....	.....	44.16
Steelton	37.00	.....	.....	.....	42.00	San Francisco	Provo	5.94	42.94	43.44	.....	.....	.....
Struthers, Ohio	36.50	.....	.....	.....	.....	Seattle	Provo	5.94	42.94	43.44	.....	.....	.....
Swedeland	41.00	41.50	42.00	42.50	.....	St. Louis	Granite City	0.75 Arb.	37.25	37.75	37.75	.....	.....
Toledo	35.50	36.00	36.50	37.00	.....								
Troy, N. Y.	37.00	37.50	38.00	38.50	42.00								
Youngstown	36.00	36.50	36.50	37.00	.....								

* Republic Steel Corp. price. Basis: Average price of No. 1 hvy. mlt. steel scrap at Cleveland or Buffalo respectively as shown in last week's issue of THE IRON AGE. Price is effective until next Sunday midnight.

Basing point prices are subject to switching charges; silicon differentials (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct); phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢ per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.00 to 6.50 pct, C/L per g.t., f.o.b. Jackson, Ohio—$45.50; f.o.b. Buffalo — $46.75. Add $1.25 per ton for each additional 0.50 pct Si, up to 12 pct. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for 0.75 pct or more P. Bessemer ferrosilicon prices are $1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorous $44.00 per gross ton, f.o.b. Lyles, Tenn. Delivered to Chicago, $49.49. High phosphorous charcoal pig iron is not being produced.

Ferromanganese

78-82% Mn, maximum contract base price, gross ton, lump size, f.o.b. Baltimore, Philadelphia, New York, Birmingham, Rockwood, Tenn.

Carload lots (bulk)	$135.00
Less ton lots (packed)	157.00
Delivered Pittsburgh	140.25

$1.70 for each 1% above 82% Mn; penalty, $1.70 for each 1% below 78%.

Briquets—Cents per pound of briquet, freight allowed, 66% contained Mn.

	Eastern	Central	Western
Carload, bulk	7.00	7.25	7.80
Ton lots	8.00	8.60	10.50
Less ton lots	8.40	9.00	10.90

Spiegeleisen

Contract prices, gross ton, lump, f.o.b. Palmerton, Pa.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Carloads	$46.00	$47.00
F.o.b Pittsburgh	50.00	51.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, f.o.b. shipping point, freight allowed, eastern zone.

96% min. mn, 0.2% max. C, 1% max. Si, 2% max. Fe.

Carload, bulk	30
L.c.l. lots	32

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	32
Ton lots	34
Less ton lots	36

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, f.o.b. shipping point, freight allowed, eastern zone.

	Carloads	Ton	Less
0.06% max. C, 0.06% P, 90% Mn	21.00	22.10	22.70
0.10% max. C	20.50	21.60	22.20
0.15% max. C	20.00	21.10	21.70
0.30% max. C	19.50	20.60	21.20
0.50% max. C	19.00	20.10	20.70
0.75% max. C, 7.00% max. Si	16.00	17.10	17.70

Silicomanganese

Contract basis, lump size, cents per pound of metal, f.o.b. shipping point, freight allowed, 65-70% Mn, 17-20% Si, 1.5% max. C.

Carload, bulk	6.65
Ton lots	7.70
Briquet, contract basis, carlots, bulk freight allowed, per lb of briquet	6.75
Ton lots	7.75
Less ton lots	8.15

Silvery Iron (electric furnace)

Si 14.01 to 14.50%, $69.00 f.o.b. Keokuk, Iowa; $73.75 f.o.b. Niagara Falls. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add 50¢ per ton for each 0.50 pct Mn over 1 pct.

Silicon Metal

Contract price, cents per pound contained Si, lump size, f.o.b. shipping point, freight allowed, for ton lots packed.

	Eastern	Central	Western
96% Si, 2% Fe	16.50	17.85	19.60
97% Si, 1% Fe	16.00	18.25	20.00

Ferrosilicon Briquets

Contract price, cents per pound of briquet, bulk, f.o.b. shipping point, freight allowed to destination, 40% Si. 1 lb Si briquets.

	Eastern	Central	Western
Carload, bulk	4.25	4.50	4.70
Ton lots	5.25	5.85	6.15
Less ton lots	5.65	6.25	6.55

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump size in carloads, f.o.b. shipping point, freight allowed.

	Eastern	Central	Western
25% Si	15.00	15.65	15.90
50% Si	7.80	8.30	8.50
75% Si	10.00	10.30	11.05
80-90% Si	11.30	11.60	12.35
90-95% Si	12.80	13.10	13.80

Ferrochrome (65-72% *Cr, 2% max. Si*)

Contract prices, cents per pound, contained Cr, lump size in carloads, f.o.b. shipping point, freight allowed.

	Eastern	Central	Western
0.06% C	23.00	23.40	24.00
0.10% C	22.50	22.90	23.50
0.15% C	22.00	22.40	23.00
0.20% C	21.75	22.15	22.25
0.50% C	21.50	21.90	22.00
1.00% C	21.00	21.40	21.50
2.00% C	20.50	20.90	21.00
65-69% Cr, 4-9% C	15.60	16.00	16.15
62-66% Cr. 4-6% C. 6-9% Si.	16.60	17.00	17.15

Briquets — Contract price, cents per pound of briquet, f.o.b. shipping point, freight allowed, 60% chromium.

	Eastern	Central	Western
Carload, bulk	9.85	10.10	10.20
Ton lots	10.75	11.65	12.25
Less ton lots	11.15	12.05	12.65

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 2¢ per lb to regular low carbon ferrochrome price schedule. Add 2¢ for each additional 0.25% N.

S. M. Ferrochrome

Contract price, cents per pound chrominum contained, lump sie, f.o.b. shipping point, freight allowed.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

	Eastern	Central	Western
Carload	16.70	17.10	17.25
Ton lots	17.90	19.20	20.00
Less ton lots	18.60	19.90	20.70

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

	Eastern	Central	Western
Carload	21.00	21.40	21.50
Ton lots	22.35	23.00	24.20
Less ton lots	23.35	24.00	25.20

Chromium Metal

Contract prices, cents per lb, chromium contained, carload, f.o.b. shipping point, freight allowed, 97% min. Cr, 1% max. Fe.

	Eastern	Central	Western
0.20% max. C	83.50	85.00	86.25
0.50% max. C	79.50	81.00	82.25
9.00% min. C	79.50	81.00	82.25

Calcium—Silicon

Contract price per lb of alloy, lump, f.o.b. shipping point, freight allowed.

30-35% Ca, 60-65% Si, 3.00% max. Fe or 28-32% Ca, 60-65% Si, 6.00% max. Fe.

	Eastern	Central	Western
Carloads	14.00	14.50	16.55
Ton lots	16.10	16.85	19.00
Less ton lots	17.10	17.85	20.00

Calcium—Manganese—Silicon

Contract prices, cents per lb of alloy, lump, f.o.b. shipping point, freight allowed.

16-20% Ca, 14-18% Mn, 53-59% Si.

	Eastern	Central	Western
Carloads	15.50	16.00	18.05
Ton lots	17.60	18.45	20.20
Less ton lots	18.60	19.45	21.20

Calcium Metal

Eastern zone contract prices, cents per pound of metal, f.o.b. shipping point, freight allowed. Add 1.5¢ for central zone; 3.5¢ for western zone.

	Cast Turnings	Distilled
Ton lots	$1.60	$2.35	$2.95
Less ton lots	1.95	2.70	3.75

CMSZ

Contract price, cents per pound of alloy, f.o.b. shipping point, freight allowed.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

	Eastern	Central	Western
Ton lots	16.00	17.10	19.05
Less ton lots	16.75	17.85	19.80

SMZ

Contract price, cents per pound of alloy, f.o.b. shipping point, freight allowed. 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

	Eastern	Central	Western
Ton lots	14.25	15.35	17.30
Less ton lots	15.00	16.10	18.05

Other Ferroalloys

Ferrotungsten, standard, lump or ¼ x down, packed, f.o.b. plant Niagara Falls, Washington, Pa. York, Pa., per pound contained W, 5 ton lots, freight allowed	$2.50
Ferrovanadium, 35-55%, contract basis, f.o.b. plant, freight allowances, per pound contained V.	
Openhearth	$2.70
Crucible	$2.80
High speed steel (Primos)	$2.90
Vanadium pentoxide, 88-92% V_2O_5 technical grade, contract basis, per pound contained V_2O_5	$1.10
Ferrocolumbium, 50-60%, contract basis, f.o.b. plant, freight allowed, per pound contained Cb	
Ton lots	$2.50
Less ton lots	$2.55
Ferromolybdenum, 55-75%, f.o.b Langeloth, Washington, Pa., per pound contained Mo.	95¢
Calcium molybdate, 40-45%, f.o.b Langeloth, Washington, Pa., Per pound contained Mo.	80¢
Molybdenum oxide briquets, 48-52% Mo, f.o.b. Langeloth, Pa., per pound contained Mo.	80¢
Molybdenum oxide, in cans, f.o.b. Langeloth and Washington, Pa., per pound contained Mo.	80¢
Ferrotitanium, 40-45%, 0.10% C max., f.o.b. Niagara Falls, N. Y. ton lots, per pound contained Ti	$1.23
Less ton lots	$1.25
Ferrotitanium, 20-25%, 0.10% C max., ton lots, per pound contained Ti	$1.35
Less ton lots	$1.40
High carbon ferotitanium, 15-20%, 6-8% C, contract basis, f.o.b. Niagara Falls, freight allowed, carloads, per net ton	$142.50
Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. (Siglo) Tenn., $3 unitage per gross ton	$65.00
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Carload lots	17.00¢
Zirconium, 12-15%, contract basis, lump, f.o.b. plant, freight allowed, per pound of alloy	
Carload, bulk	5.50¢
Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carload	6.50¢
Ton lots	7.00¢
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Car lots	9.00¢
Ton lots	9.75¢

Boron Agents

Contract prices per pound of alloy, f.o.b. shipping point, freight allowed.

Ferroboron, 17-50% min. B, 1.50% max Si, 0.50% max. Al, 0.50% max. C.

	Eastern	Central	Western
Less ton lots	$1.30	$1.3075	$1.329

Manganese — Boron 75.00% Mn, 15-30% B, 5% max. Fe, 1.50% max. Si, 3.00% max C.

Ton lots	$1.89	$1.903	$1.935
Less ton lots	2.01	2.023	2.044

Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni.

Less ton lots	$2.10	$2.1125	$2.1445

Silcaz, contract basis, f.o.b. plant freight allowed, per pound.

Carload lots	35¢

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 50 lb and over.

No. 1	87.5¢
No. 6	60¢
No. 79	45¢

Bortram, f.o.b. Niagara Falls

Ton lots, per pound	45¢
Less ton lots, per pound	50¢

Carbortam, f.o.b., Suspension Bridge, N. Y., freight allowed, Ti 15—17%, B 0.90—1.15%, Si 2.5—3.0% Al 1.0—2.0%.

Ton lots, per pound	8.0¢

JEFFREY CHAINS IN THE STEEL MILL

HOT COIL CONVEYORS

. . . Another of the steel mill conveying problems solved by Jeffrey chain engineers is handling heavy coils of sheet, hot from the coilers.

Jeffrey coil conveyor chains prevent costly shutdowns because they are built especially for the job. They are rugged, precision built of proper steels, of balanced design and accurately heat treated.

Every pair of Jeffrey coil conveyor chains will resist wear and heat, carry loads of hundreds of tons, hold pitch even with hardest use.

Of equal quality are Jeffrey chains for sheet transfer tables, pallet conveyors, slab transfer and crop conveyors.

Use Jeffrey chains throughout your steel mill.

THE JEFFREY MANUFACTURING COMPANY

925-99 North Fourth St., Columbus 16, Ohio

ESTABLISHED 1877

Complete Line of Material Handling, Processing and Mining Equipment

Baltimore 1 · Birmingham 3 · Boston 16 · Buffalo 2 · Chicago 1 · Cincinnati 2 · Cleveland 13 · Denver 2 · Detroit 13 · Huntington 19 · Jacksonville · Milwaukee 11 · New York 7 · Philadelphia 3 · Pittsburgh 22 · St. Louis 3 · Salt Lake City 1 · Scranton 3

Schieren belt on the pulleys of your machines gives you maximum production power with minimum "time out" for maintenance.

Here's why:

BETTER PULLEY GRIP—MORE RPM — The uniform, clean, full grain surface of Schieren belt assures maximum coefficient of friction — delivers more producing speed and power.

LESS STRETCH—LESS MAINTENANCE — Tests have shown that Schieren belt has less than half the stretch allowable under government specifications. In addition, Schieren belt's higher tensile strength and stronger laps and plies provide greater overload capacity and longer belt life.

To improve and protect your production rates, put Schieren belt on your machine pulleys.

Write for further information on leather belting, packings or leather specialties of all types.

SC-12

CHAS. A. SCHIEREN CO.

36 FERRY ST., NEW YORK 7, N. Y.

60 Front Street W., Toronto, Ont.

Tanners and Manufacturers Since 1868

Branch Offices in Chicago, Dallas, Denver, Detroit, Lowell, Newark, New York, Philadelphia, Pittsburgh, Salt Lake City

Fatigue Cracks

BY C. T. POST

Sour Notes

• • Memo to Tinnerman Products, Inc.: The pert steno shown in your advertisement of Aug. 28 (p. 99) did the trick in calling the boys' attention to the advantages of C7000 speed nuts, but it has the girls in the office here fairly in a tizzy. It's impossible to take dictation in that posture, they say.

When crossing the right leg over the left, no support is afforded by resting the elbow on the outside of the right knee. It would slip right off. Furthermore, without a wrist like iron, it's impossible to hold the shorthand book unsupported and take readable notes. And Mrs. Scopolsky, the charwoman, was just in to object to the boss shown smoking a stogie without an ash tray in sight. We don't think the readers will be too critical, though. After all, according to *Vogue*, those short skirts won't last much longer.

Leisure Reading

• • For good solid enjoyment, we contend there's nothing like reading directories. The little volume issued by the Pacific Telephone & Telegraph Co. gave us great amusement in our tender youth when we'd phone the town's haughtiest dowagers to ask innocently "Is this the laundry?" ("No." "Don't you wash?" "NO!" "You dirty thing"). We later furthered our education immeasurably in scanning Funk & Wagnalls Unabridged Dictionary, which is a directory in the broad sense. But our latest favorite on the bedside table is the new edition of IRON AGE'S own "Directory of Tool Steels." This little volume has finally convinced us of the great initiative and originality of the British after all these years. American tool steel producers, we find, have little imagination in naming their products. Three or four of them, for instance, have attached themselves to the prosaic tag, "Red Label," and many wallow around in totally unimaginative combinations of letters and numerals in designating their products. Of more than 1700 types of steel listed, it took Wardlow's, Ltd., Sheffield, England, to come up with "Double You Hot Stuff," designating a high-speed steel containing W 9.50, Cr 2.50 and V 0.10 to 0.15. And for their companion alloy cutting steel, containing C 0.90 and Cr 3.75 Wardlows chooses the menacing name "Double You Die," worthy of the Green Hornet. The new edition of the Tool Steel Directory, in case you're barren of light reading matter, can be purchased through the Reader Service Department—$2 a copy; three for $4.50; or $1 each for six or more.

Generations In a Paragraph

• • Memo to Robert E. Hannegan, Postmaster-General: In issuing next year's mail contracts you will want to know that Section 1783, *Postal Laws & Regulations*, provides that:

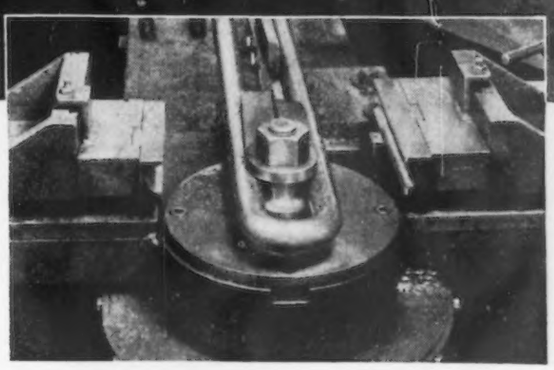
"The Postmaster-General may contract for carrying the mail on any plank road in the United States when the public interest or convenience requires it."

So that we can't be accused of taking matter out of context, we'll report that the balance of Section 1783 deals with the award of air mail contracts.

Big Gun

"Firing a cartridge slightly larger than .45 caliber, a steel punch capable of shooting holes through ¾-in. steel is now being used by railroad maintenance crews. The explosive force drives the punch through steel rails, leaving a clean round hole that eliminates the time-consuming job of drilling holes in rails when laying tracks."

• • This recent item, appearing on the Newsfront page of your favorite family journal, may well leave a wage of frustration across the land among the more erudite track gangs. According to our editorial style manual, which is never, never wrong, caliber refers to the bore of small arms, measured in hundredths of an inch. Thus, a 45 caliber pistol would darn near jerk your arm off. But, .45 caliber—that would be a water pistol, just like the rollicking American Legionnaires turned on pretty passersby here last week.



they bend this stainless tube with flowers

Note the unusually tight return bends in this heating coil unit. The tubes are tough, corrosion resistant stainless steel, yet the inside bend is only 1½" mean radius—on a 1¼" O.D. x 16 ga. tube!

It wasn't done without difficulty. The tube is bent on an automatic machine with ball-type mandrel. Trouble was, the ball, after only a few bends, picked up a heavy burr. Then, on a tight return, the tubes would invariably chatter, sometimes break. Worse yet, constant redressing of the ball reduced its size—on larger bends, the extra clearance made tubes wrinkle.

Production was at a standstill, until a Frasse engineer noticed that the mandrel lubricant was being forced out by the extreme pressure. From a nearby drugstore, he took "flowers" of sulphur, mixed it with auto grease in proportion, and thinned the mixture* down with machine oil to the consistency of soft butter. This was rubbed well into the mandrel surface, then applied as a heavy coating. Tubes were bent to all radii without further trouble.

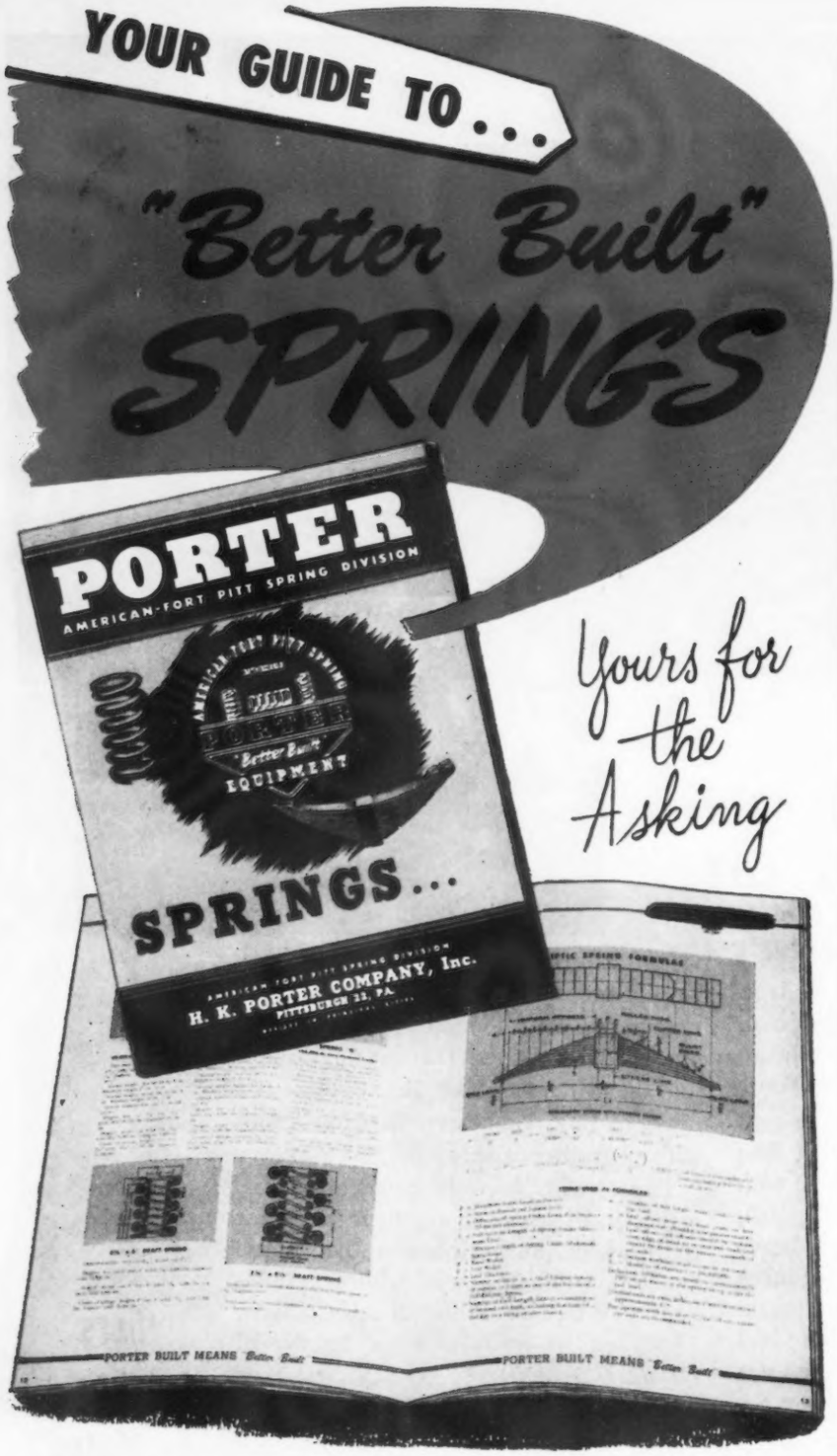
Frasse, with its wide range of shapes, grades and sizes, is an excellent source for your stainless steel. More than that, Frasse knows how to help you in stainless applications. Call us. *Peter A. Frasse and Co., Inc., 17 Grand Street, New York 13, N. Y. (Walker 5-2200) • 3911 Wissahickon Avenue, Philadelphia 29, Pa. (Radcliff 5-7100) • 50 Exchange Street, Buffalo 3, N. Y. (Washington 2000) • 157 Richmond Avenue, Syracuse 4, N. Y. (Syracuse 6-2103) Jersey City • Hartford • Rochester • Baltimore*

FRASSE

for Stainless Steels and Tubing

bars
sheets
plates
strip
angles
tube
pipe
fittings
wire

**Details for mixing this lubricant furnished on request. Write us.*



Here in this 28-page engineering catalog you will find everything you need to know about spring specifications: 28 fact-filled pages containing all the data necessary to specify springs for any purpose—formulas, graphs, charts, tables and illustrations for all types of springs from light wire to heavy elliptic. Write today for your copy of Catalog 305.

H. K. PORTER COMPANY, Inc.
AMERICAN-FORT PITT SPRING DIVISION
PITTSBURGH 22, PENNSYLVANIA
District Offices in Principal Cities

Dear Editor:

FREIGHT CARS

Sir:

On two successive pages of your Aug. 28 issue there are contained discussions of the reasons why freight car production has not reached the levels which the car builders and others have sought. These statements are so diametrically opposed to each other that it would seem they cannot but cause confusion on the part of readers. Moreover, there are statements in each which seem to us seriously open to question.

On p. 106 it is stated that "the steel industry is furnishing steel at a rate above that promised for a 10,000 car month to car builders . . . " Just to get the record straight, this organization has recently conducted a survey of the car builders and finds they are not and have not been receiving anything like the quantities of steel which your statement would indicate.

In the same paragraph, after stating that production will probably fall short of the 10,000 car goal in October, the following appears: "The distribution and production of component parts plus a lack of skilled labor is responsible for this situation at car building plants. Much of the material is coming from long distances and must be assembled in banks sufficient to enable an economical mass production of the maximum number of cars." This certainly is a fair statement of some of the problems which our industry has been facing. However, on p. 107 of the same issue there is another statement which fails completely to recognize the situation. Under the heading "Rather Obvious" is the following comment: "With the car builders' yards full of all types of steel needed to meet the proposed building schedule, and production still low, it appears political rather than physical reasons are to be blamed. It seems rather odd that railway supply companies and car builders should, on their own hook, spend considerable money in plugging for a 6 pct return on railroad investment. Many observers believe that the entire railroad industry is attempting to use the car shortage as a lever for higher rates, and new car building records to date seem to substantiate this."

Commenting on this paragraph sentence by sentence . . .

S. M. FELTON
President

American Railway Car Institute
New York

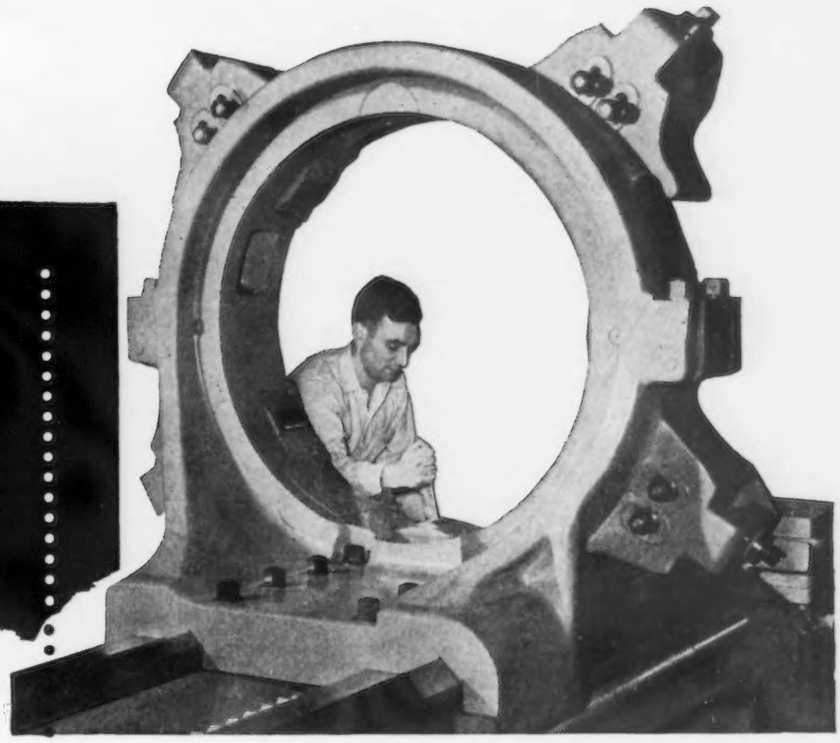
● No comment needed. This "Rather Obvious" one slipped by us. We apologize, Mr. Felton.—Ed.

INVOLUTE SPLINE

Sir:

In the April 3, 1947, issue an article, "Engineering Aspects of the

BIG PRODUCER



How do you handle machining of outsize, irregular parts?

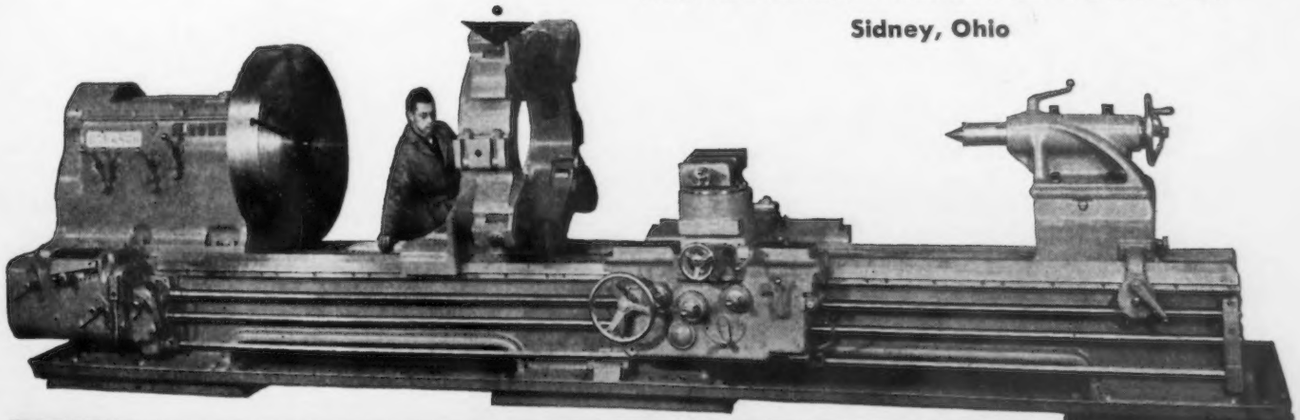
Here's a way that may save you time . . . and money. Hold the part in a fixture or cradle, and turn it on a Monarch; you'll get peak production *at a profit.*

For example, for one customer we've raised a 32″ x 180″ Model NN Engine Lathe in the sand, to swing 48″ over the bed and 36½″ over the cross slide, as illustrated. There's ample power for the turning and boring operations, yet no idle investment in ponderous, unused capacity. The antifriction, steady rest provides 36″ to 38½″ capacity—more than enough to handle a variety of jigs and fixtures. The result is a simple solution to this customer's bothersome production problem. May we help you, too?

ACCURACY · ECONOMY · LONG LIFE

Monarch
TURNING MACHINES

THE MONARCH MACHINE TOOL CO.
Sidney, Ohio



FOR A GOOD TURN *FASTER*——TURN TO MONARCH

The Life of Your Product Hangs by a Thread!

Yes, your product's length of life in consumer service is determined to a large extent by the precision and strength of threads—the threads of screws, bolts, nuts and allied threaded fastenings used in its assembly.

The old adage "a chain is as strong as its weakes. link" applies perfectly to the assembly of your product. Obviously, it can be only as strong, precise, efficient and enduring as its fastenings.

HOLTITE Engineered Fastenings are precision-made to resist the loosening effects of vibration. Scientific processing and heat-treating of laboratory-selected materials assure strength far beyond ordinary demands. Under vigilant, skillful supervision these qualities of strength and precision are combined to produce fastenings that effect economies in application and permanance in performance.

The HOLTITE line comprises a complete range of dependable fastenings in all standard styles, sizes, finishes and heat treatments. Furnished with HOLTITE-Phillips Recessed Heads or slotted heads. SPECIALS made to order exact to your specifications, blue prints or samples.

CONTINENTAL SCREW CO. New Bedford, Mass., U.S.A.

Involute Spline," was presented. I wish to obtain a copy of this article if possible. Your article will prove most useful in my gear design courses at the General Motors Institute as well as at my place of employment, the Allison Division of General Motors. I am now working in the gear design section of the transmission engineering department.

LEON E. ONKEN
Indianapolis, Ind.

RIGHT PEOPLE?

Sir:

Your weekly editorials are wonderful but they do not reach the right people. Wish you were writing for the *Journal*, *Daily News* or any large circulation. Shame not to print such editorials where there is more circulation.

NILS ANDERSON
Easton, Md.

LOCK JOINT

Sir:

In the Aug. 14 issue on p. 80, there is an article on a new lock joint constructed for sheet metal structures. Reference is made to the Cookson lock joint described in *Sheet Metal Industries* (London, May 1947). We are very much interested in this method of interlocking metal and would appreciate your advising if it is possible to get a copy of the information . . .

LEON F. DUSING
President
Dusing & Hunt, Inc.
Buffalo

● A complete description of the joint was published in the May, 1947, issue of *Sheet Metal Industries*, a London publication, and entitled "The Cookson Lock Joint." Photostatic copies of this article could undoubtedly be obtained from the Engineering Societies Library, 29 W. 39th St., New York, or a copy of the article itself could be secured by writing directly to *Sheet Metal Industries*, 49 Wellington St., London, WC2.—Ed.

ALLOY STEEL FLAKING

Sir:

Please send me tear sheets on "Flaking in Alloy Steels" which appears in the July 17, 1947 issue.

K. G. PRESSER
Chief Metallurgist
National Supply Co.
Springfield, Ohio

THREADLESS JOINT

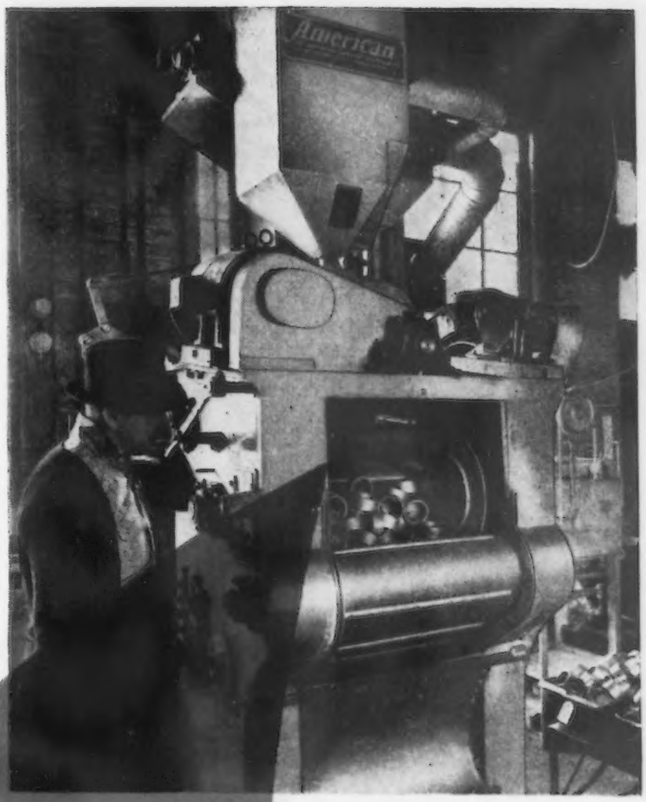
Sir:

Can you furnish me with additional information regarding the coupling for tubes and pipes which requires no threads, as illustrated on p. 112 of the Aug. 14, 1947 issue.

J. L. GREGG
Ass't to Vice-President
Development Dept.,
Bethlehem Steel Co.
Bethlehem, Pa.

● The coupling was invented by William Larymore and was tested (as the photograph shows) at the University of Sydney.

Wheelabrator's thorough cleaning helps to speed production in the BEARING INDUSTRY



The torrent of abrasive, hurled by the Airless Wheelabrator, scours every surface brilliantly clean in but a few minutes. Loads of bearing castings that formerly required 30 minutes to three hours for cleaning by other methods are now cleaned by the Wheelabrator in 4 to 12 minutes. For example:

At the Heppenstall Co., Bridgeport, Conn. a Wheelabrator Tumblast cleans 200 inner races for S.K.F. and Hyatt bearings in 8 minutes. This work previously required 4½ hours by hand in a sand blast room.

The amount of time and labor saved through the use of a Wheelabrator has enabled Bearing Manufacturers to relieve overcrowded cleaning rooms and to increase their productivity. Complete data telling how they have solved their cleaning problems is now available in a new study prepared by American . . . write for it.

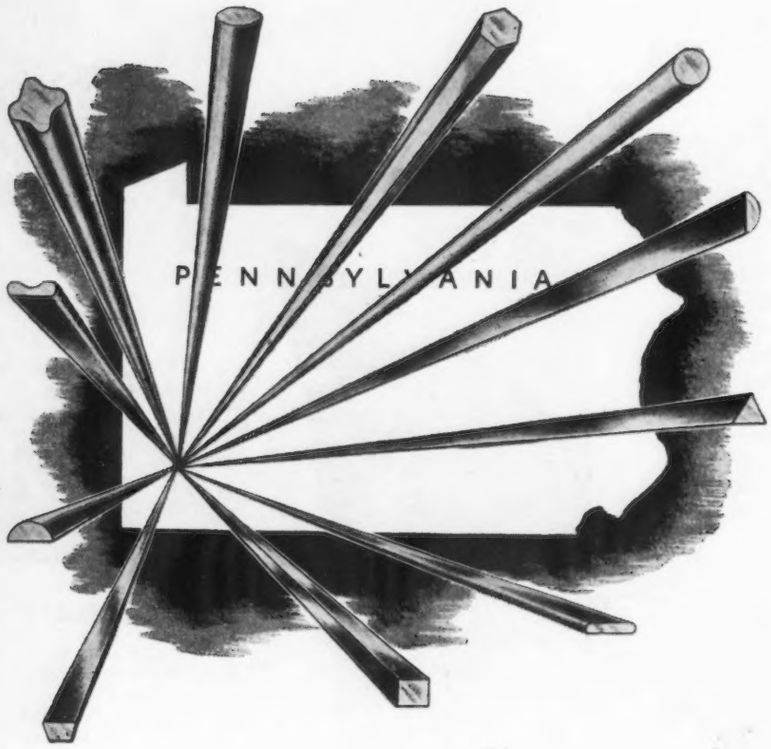
TYPICAL USERS

Aetna Ball Bearing Co.
Bower Roller Bearing Co.
Bantam Bearing Div.
Canadian Bronze Co., Ltd.
Cleveland Graphite Bronze Co.
Dodge Mfg. Co.
Fafnir Bearing Co.
Hyatt Bearing Div.
Fischer Foundry Div.
Bound Brook Oil-less Bearing Co.
Kaydon Engineering Co.
Marlin-Rockwell Corp.
McGill Mfg. Co.
Link Belt Co.
Magnus Metal Division
National Bearing Metals Div.
Nice Ball Bearing Co.
S. K. F. Industries
Spicer Mfg. Co.
Timken Roller Bearing Co.
Norma-Hoffman Bearing Corp.
Arnold, Schwinn & Co.
Tyson Roller Bearing Co.
Andrews Co. . . Bearing Div.
Bunting Brass & Bronze Co.
Johnson Bronze Co.
Ford Motor Co.
Roller Bearing Co. of America
Burgess Norton Mfg. Co.
Toronto Foundry Co.

Write for our latest treatise "CLEANING PROBLEMS SOLVED In the Bearing Industry". Contains complete case history data, and a wealth of other material applicable to the Bearing Industry.

American
WHEELABRATOR & EQUIPMENT CORP.
(FORMERLY AMERICAN FOUNDRY EQUIPMENT CO.)
510 S. Byrkit St., Mishawaka 3, Indiana

PAGE *Stainless Steel* WIRE



Yes, a lot of the stainless steel wire that is serving the country as part of manufactured products, came from Monessen, Pa. That's PAGE headquarters.

During the many years we have been working with stainless, we have learned much about the applications of stainless steel wire in manufacture. That's why we suggest that when you have a problem involving wire, it will pay you to . . .

Get in touch with Page!

ACCO

Monessen, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

Further information can be obtained from the Director, Mechanical Engineering Dept., University of Sydney, N.S.W., Australia. This information has also been passed on to the large number of other readers who were interested in the coupling, including National Tube Co., Dresser Mfg. Co., F. E. Myers & Bros. Co., Chicago Nipple Mfg. Co., and Sears, Roebuck & Co.—Ed.

WORK WEEK CHANGE

Sir:

We are contemplating changing our work week and would like to obtain all subject matter available so as to substantiate our final decision. Would you please send a tear sheet or copy of "Study Seeking to Find Most Efficient Work Week" from the issue of Sept. 13, 1945?

ARNO HESSE
Ass't Plant Supt.

Mall Tool Co.
Chicago

COMBER PINS WANTED

Sir:

We are searching for a source of comber pins. These are needles that are soldered on to the half lap on a cotton comber. These needles are designated as follows, all being ⅜ in. long: No. 22, 24, 25, 26, 27, 28, 29, 30, 31, 32. We do not know what the diameters are but the needles are very fine. There are only three shops in the South which use these and they are all located right here in Gastonia. These comber pins have been coming from England but the supply has dwindled to a trickle and we are looking around trying to find a source here in the States. Do you know any one in the U. S. who is making these at present or anyone who could or would make them?

W. J. SIMMONS
Secretary

Jenkins Reneedling Co., Inc.
Gastonia, N. C.

NO FINANCIAL REPORT

Sir:

I would greatly appreciate your giving any information you may have on the Cleveland Graphite Bronze Co., Cleveland, such as financial status, stock market prices past years, products, good or bad investment, trends, etc.

M. D.

Gary, Ind.

● THE IRON AGE is concerned only with the technological aspects of a company's activities. We suggest you write directly to the company or contact any reputable stock exchange house for such financial data.—Ed.

SILICON CARBIDE TUBES

Sir:

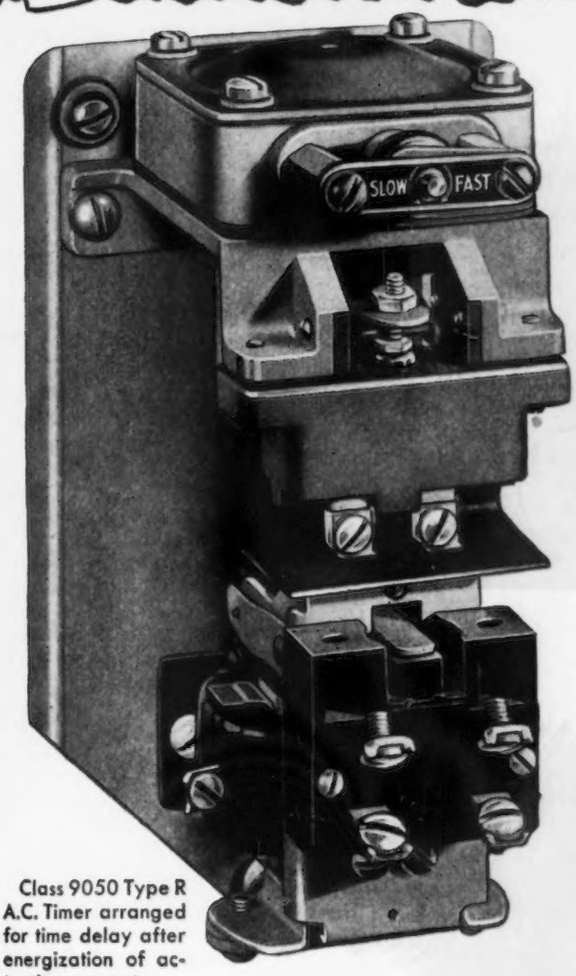
We would greatly appreciate receiving three sets of tear sheets of the article entitled "Silicon Carbide Radiant Tubes for Annealing Furnaces" from the issue of Aug. 14,

Better than Ever

PNEUMATIC TIMER

with *New* Contact Mechanism

A.C. and D.C. | WIDE RANGE | ACCURATE | FLEXIBLE | COMPACT | INEXPENSIVE



Class 9050 Type R A.C. Timer arranged for time delay after energization of actuating magnet

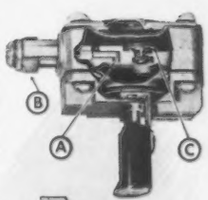
Addition of a heavy-duty, snap-action contact mechanism, with isolated N.O. and N.C. Circuits, to a dependable timing mechanism, improves performance and broadens an already wide range of applications.

For more than ten years Square D's Pneumatic Timer has been used successfully for timing resistance welds, machine tool sequences, process industry operations and scores of other similar functions. Timing is accurate and easily adjustable.

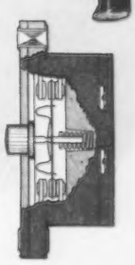
Two kinds of operation—time delay after either *energization* or *deenergization* of actuating magnet—provide for circuit simplification and greater dependability.

Adjustment is by either a knurled knob, or a micrometer mechanism graduated from 0 to 80. Range is 0.2 seconds to 3 minutes, with accuracy better than ±10%.

Auxiliary Circuits operated by actuating magnet usually eliminate need for additional switching relays.



TIMER OPERATION—Simple operating principle is based on the interval required to transfer a small volume of filtered air from upper to lower chamber through a regulated orifice (A). Rotation of knurled knob (B) gives wide range of adjustment. Air returns through valve (C) for instantaneous reset.



CONTACT MECHANISM—Has separate N.O. and N.C. circuits with double-break, silver contacts . . . Simple operating mechanism uses alloy springs separate from heavy contact blade which carries current . . . Stainless steel compression-return spring . . . Enclosed in sturdy case of highly arc-resistant melamine . . . Four No. 6-32 binder head terminal screws.

FEATURES

Simple Knob or
Indicating Micrometer Adjustment
Auxiliary Circuits Operated from Magnet

	CONTACT RATINGS						
	A. C. Voltage				D.C. Voltage		
Electrical Ratings	110	220	440	550	115	230	550
Normal Amperes	15	10	6	5	0.5	0.25	0.05
Inrush Amperes	40	20	10	8	—	—	—

Write *for Pneumatic Timer Bulletin 9050. Address* SQUARE D COMPANY, *4041 North Richards St., Milwaukee 12, Wis.*

VISIT US *at the Machine Tool Show, Chicago, Sept. 17-26 • Booth 678*

SQUARE D COMPANY

DETROIT • MILWAUKEE • LOS ANGELES

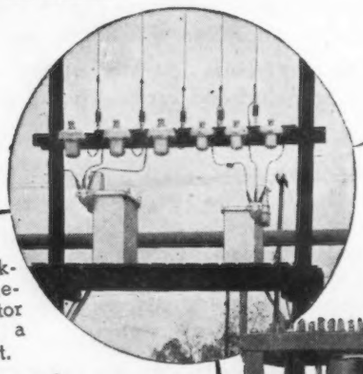
SQUARE D CANADA, LTD., TORONTO, ONTARIO • SQUARE D de MEXICO, S.A., MEXICO CITY, D.F.

Automatic Starters
for 2300 Volt Motors
by EC&M

Complete enclosure of all high voltage parts not only provides a *shock-proof* installation but reduces time and material in installation. With the mechanism totally oil-immersed, operating parts are always lubricated and also protected from corrosion. Push button operation brings the motor up to speed with greater skill than human hands could do it.

Ask for Bulletin 1047-C.

Prominent oil refinery selected EC&M 2300 volt Starters and mounted them out-of-doors on platform between power poles . . . saved time and materials.



1 Single, quick-break, double-throw contactor operated by a single magnet.

2 Two liberally-rated auto-transformers marked T_1 and T_2.

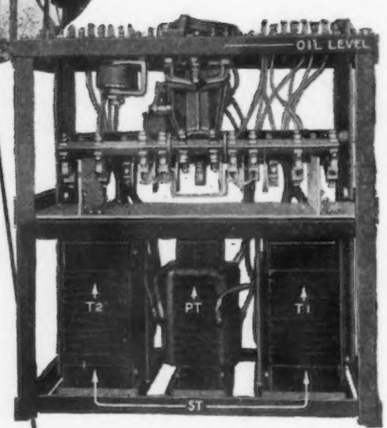
3 Potential transformer (marked PT) for 220 volt push button circuit.

4 Current limit relay trips mechanical latch to transfer from reduced to full voltage.

5 Variable reactor on top of mechanism permits quick change of transition-setting, when desired.

6 Continuous torque acceleration.

7 Adjustable, magnetic type overload relays, arranged for magnetic reset from push button.



Note clean-cut design of this reduced voltage starter mechanism for 2300 volt motors.

THE ELECTRIC CONTROLLER & MFG. CO.
2698 EAST 79th STREET • CLEVELAND 4, OHIO

1947. Thanking you for your cooperation in this regard, we remain,

A. KIPP
Technical Information Center
Philips Laboratories, Inc.
Irvington-on-Hudson, N. Y.

STAINLESS POWDER BASE PAINT

Sir:

On p. 61 of the Aug. 21 issue is a paragraph concerning stainless steel powder base paints and lacquers. Who supplies this material commercially?

I. W. LOVELADY
President
Sivalls Tanks, Inc.
Odessa, Tex.

● Charles Hardy, Inc., 420 Lexington Ave., New York.—Ed.

NEW CARBURIZING STEELS

Sir:

The article on "New Deep Hardening Carburizing Steels" in the July 24 issue is good. May I have tear sheets of this article?

G. W. LAPIER
Cleveland Graphite Bronze Co.
Cleveland

RAILROAD STEEL CONSUMPTION

Sir:

The American Iron and Steel Institute prepares a statement AIS 16 "Shipments of Steel Products by Market Classifications." This report was started in 1940, and shows, among other things, the amount of steel produced and shipped. (Code 061) Freight cars—railroad shops, and (Code 062) freight cars—independent builders (including parts manufacturers). The institute advises that you formerly collected and published similar data. We would very much like to have information for these two classifications, as well as the total steel products shipped for the period 1927 to 1939 inclusive.

W. C. TABBERT
American Railway Car Institute
New York

● We are forwarding totals for the railroad industry as well as total steel consumption for the period 1927-39, but wish to point out that in our breakdown of steel consumption by industry we did not draw as fine a line of distinction between the segments of individual industries, as did the institute. Our figures are for the railroad industry as a whole and include rails and right of way construction as well as cars. However, from your knowledge of railway car building you can undoubtedly assign an approximate proportion of the total consumed by the railroad industry each year to car building. Figures on rail production in these years are readily available.—Ed.

SPOTWELD ANALYZER

Sir:

Would you please send me the full text of the article which I saw briefed recently, titled "Spotweld Analyzer for Maintenance Work" by D. F. Hays, published in the June 12 issue, pp. 49-51.

J. A. BARSTAD
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